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ORIGINAL ARTICLES

THE AMERICAN ACADEMY OF PEDIATRICS—ITS GROWTH AND DEVELOPMENT

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NEXT month—January 1948—the first issue of the Academy's new journal, PEDIATRICS makes its appearance. In a way this marks a milestone in the developmental history of our organization. It seems appropriate that on this occasion we should pause for a quick look back over our record of the past sixteen years, and for a somewhat more detailed examination of the expanded program of activities in which we are now engaged. We may well ask ourselves to what extent the Academy has succeeded in carrying out the purposes which our founders had in mind. Also, it seems pertinent to inquire how effectively and how completely we are utilizing the individual and collective potentialities contained within our organization to find solutions for the many troublesome problems now existent in the socio-economic phases of medical practice.

According to our historian, Dr. Marshall Pease, the Academy was conceived sometime in 1922, although its actual birth did not occur until some eight years later. It is a matter of history that at a meeting of the American Medical Association in 1922 the Section on Pediatrics passed a resolution favoring the Sheppard-Towner Act. On the same day the House of Delegates of the American Medical Association passed a resolution condemning the Act and later on passed another resolution that Sections of the American Medical Association should confine their activities to the scientific aspects of medicine and leave matters of policy to the House of Delegates. From then on there was agitation for an independent and national pediatric group in which all qualified pediatricians could be enrolled and which would provide a public forum where discussion could be free and open. It was not until 1930, however, that the first organizational meeting was held in Detroit, at which Dr. Isaac A. Abt of Chicago was elected President. In his presidential address a year later in Atlantic City, Dr. Abt outlined the aim and scope of the Academy in the following words, "If the American Academy of Pediatrics will ultimately succeed and fulfill the hopes of its founders, it must have at all times the unstinted respect and confidence of the entire medical profession and the enthusiastic support of the pediatricians as well as the confidence and respect of the public at large. It should avoid

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the odium that comes from partisan or selfish politics. It should, however, courageously defend its medical prerogatives and the rights of the sick and the oppressed, promote development of children's health and demand the highest professional standards of morality and education among its members. No organization should be better fitted to be the voice of child health and protection than the association of qualified and accredited pediatricians of America."

A year later Dr. John Lovett Morse in his presidential address, entitled "The American Academy of Pediatrics—Why and What For," stated, "The objects of the American Academy of Pediatrics, as I see them, are primarily altruistic. They are, in brief, to improve the health and welfare of our children, to raise the standards of pediatric education and practice, and to encourage research in pediatrics." It should be noted that both Dr. Abt and Dr. Morse, who unquestionably reflected the views of their contemporaries, emphasized the Academy's responsibility for leadership in all movements affecting child health and welfare. "We should take part in all the great movements which are going on," said Dr. Morse. "We should help to direct them, not sit by and find fault because we are not consulted."

While it may have taken a good many of its youthful years to approach this goal which seemed important to our founders, nevertheless our organization has been building upon a firm foundation in other directions. Numerically the Academy has grown from some 304 charter members when it was established in 1930 to a current membership of nearly 2,200. The yearly increment has been remarkably constant regardless of depression or war. How long can it be expected that this rate of increase will continue and how large eventually will the Academy become? In the long run this will depend upon the course taken by medical education and specialization. At the present time there are some 2,600 pediatricians certified by the American Board of Pediatrics. Between 10% and 20% of the children in the nation depend upon this group for their complete medical care. If the pediatricians are to take over the medical care of a majority of the children, then obviously the number of pediatricians will have to increase manyfold—perhaps to as many as 10,000 or 12,000. The Children's Bureau has been quoted as saying there is need now for 7,500 pediatricians. On the other hand, the trend in medical education may be toward the better pediatric training of general practitioners in medical schools and in hospital internships, so that they will be qualified to care for all the ordinary medical needs of children. In this case the pediatrician's role would be that of strict specialization with services limited to problems requiring specialized skill and training. At the present time it can be said with certainty that there is no indication whatever of a decrease in the number of physicians going into pediatrics. On the contrary, the number would seem to be increasing if the number of applicants being examined by the American Board of Pediatrics can be used as an index. It would seem to be a reasonably safe prediction that within another ten years the membership of the Academy will exceed the 3,000 mark.

Our scientific sessions, too, have kept pace with our numerical development. So large have our annual meetings become that there are now only a dozen or so cities in the country which afford adequate accommodations. The step taken last year by which all arrangements for areal meetings, except the program, are carried on by the central office will, I am sure, be found by the membership to possess distinct advantages over the old method of holding regional meetings. Already it has become necessary to schedule meetings many months in advance, which enables the membership to know when and where all meetings of the Academy are to be held over a period of years. Furthermore, it is a definite benefit to the Academy financially to have the arrangements with the commercial

exhibitors for all meetings in the hands of a single person; namely, our able Secretary, Dr. Grulee.

The major activity of the Academy is, of course, its scientific sessions. Their purpose is to improve pediatric education by making available regularly the advances in pediatric knowledge. That this responsibility toward its membership has been ably discharged by the Academy since its beginning is undeniable. With the present arrangement of areal and national coverage, and with a continuation of the high quality of programs we have known in the past, the membership should have full opportunity to keep abreast of the latest in scientific advancement at all times.

No look back, however quick, or no present evaluation should fail to recognize the contribution made by the state chairmen in the growth of the Academy. Upon their shoulders has rested in no small degree the responsibility for formulating and for executing programs and policies of the Academy as a whole. Representing all parts of the country, they reflect the opinion and experience of local medical societies, health agencies, and all other groups concerned with the care of children. It is not surprising that they in turn have been able to carry out effectively the Academy's national activities, based as they have been upon the composite views brought to the council table by these same state chairmen. The monumental task of collecting data for the Study would not have been possible without the good offices of this group. Our founding fathers are to be commended for their wisdom and foresight in providing for state chairmen as an integral part of the organizational plan of the Academy.

It would be appropriate in this hasty recapitulation to list the contributions which have been made by committees of the Academy, but such an undertaking would occupy a volume in itself. Nine committees reported at the first session of the Executive Board in 1931. Today there are twenty-seven through which the Academy is intensifying and expanding its program of activities. It would be difficult indeed to estimate how much of the national prestige now enjoyed by the Academy has been gained by the work of its committees. There are few national organizations whose work embraces the welfare of children that do not have Academy representation.

Dr. Morse in his presidential address made the remark that committees are useless unless they do something. His remark must have had a most salutory effect down through the years, for as long as I have been associated with Academy activities I have known of few committees who failed to carry out their assignments creditably.

I should like to mention still another achievement of the Academy, the eventual outcome of which may lead to a development of considerable magnitude. In 1942 Dr. Grulee made a trip to Mexico to see how the Latin American group felt about a Latin American division of the Academy. The response was favorable, and during the last five years organizational work has been carried on with the results that District IX is now a full-fledged division of the Academy with a membership of some 170 pediatricians from the Latin American countries. The Pan American Congress in Washington was the first meeting of this district. It was an outstanding success. The next meeting of District IX will be in Mexico City in 1949, with subsequent meetings being held in various parts of Latin America every two years. What this liaison with our friends to the south may ultimately achieve in terms of exchange of scientific information, of international good will, and of promotion of friendship cannot be foretold with accurracy, but certainly it holds great promise. The Academy today has the distinction of including in its membership pediatricians from the entire western hemisphere.

This year the Academy has taken over the publication of its own journal. One of the

purposes behind this move was to have the Academy share in the income derived from its publication in order to carry on its increasing activities. Also I feel it offers other advantages to the membership as well. Perhaps the chief of these is the intent of the Editorial Board to publish an outstanding journal whose articles will be practically helpful but which at the same time will be challenging in their scientific content. And I am sure we all must admit to a certain pride of ownership.

In summary, then, it may be said that during its maturing years the Academy has undergone a phenomenal growth numerically, has promoted pediatric education through the excellence of its scientific sessions, has achieved solidarity by the soundness of its organizational structure, has contributed much to the welfare of children through the work of its voluntary committees, has become international in scope and, finally, has undertaken the publication of its own scientific journal.

In November 1944, by its action at the annual meeting in St. Louis, the Academy entered upon a new field of endeavor which is best described as research in the field of pediatric public health. Although it may have appeared that this was an entirely new venture, actually it is but the carrying out of suggestions which have been made repeatedly since the Academy was founded. I have already quoted the remarks made by Dr. Abt and Dr. Morse in their presidential addresses. In 1931 Dr. Henry Gerstenberger, reporting for the Committee on Hospitals and Dispensaries, recommended "that the Academy regularly secure information as to the existing facilities and needs of hospitals in the United States caring for infants and children to enable the American Academy of Pediatrics to aid individual institutions or units to become better agents in the care of infants and children." It was further proposed that for this purpose a full time secretary be appointed and a budget to meet the expense be set up. In the discussion which followed, Dr. Grulee expressed the opinion that Dr. Gerstenberger had bitten off a pretty large bite. Nevertheless Dr. Grulee also recommended that a survey of children's hospital facilities be made, and later on, as chairman of this same committee, did conduct an extensive survey of children's hospitals and contagious hospitals as they existed at that time. Subsequently, many others have stressed the need for a continuing program of this type, but large-scale action did not get under way until the Academy had been in existence some 14 years. In view of the magnitude of the task as we know it to be, it seems well that the Academy did not undertake this expanded phase of its work until it had reached its present degree of maturity. However, it is a proper function of the Academy and one which rounds out its full purpose as envisioned by its founders and as reiterated by its successive leaders.

Broadly speaking, I think it is fair to say that the immediate stimulus which prompted the Academy to undertake its Study was the threat of ever increasing governmental encroachment into the practice of medicine. The majority of our membership, I should say, is of the opinion that a Pepper Bill or a Wagner-Murray-Dingell Bill is not the best answer to the problem of improving the medical care of our people. On the other hand, I think a majority would willingly admit that problems in the social and economic distribution of medical facilities and services do exist which demand attention. It seems altogether proper, therefore, that a group of well organized and forward looking physicians such as comprise the American Academy of Pediatrics should determine for themselves the existing deficiencies in medical facilities and services, and having done so should seek improvement or correction wherever need has been demonstrated. To fill in these gaps by measures within the present structure of medical practice is to my way of

thinking a far sounder procedure than by the institution of a revolutionary, government dominated, politically administered system by whatever name one wants to call it, which would not have the sympathetic support of the medical profession as a whole. Medicine in this country has attained its high standard under a dual system of private practice and public health. As Dr. H. E. Thelander so ably stated in a recent California County Bulletin, "If the aim is not elimination of a private practice, then public health should define clearly its purpose and ultimate aims so that private and public health together might reach agreement on their respective spheres of influence. Where these spheres overlap, standing committees at local, state, and national levels could be maintained to review the problems and make decisions when indicated. Only then will the perennial struggle against dangerous legislation cease so that we might get on with our business of establishing a health system for our nation second to none."

It is not necessary to review here in detail the work of the Study. All of you are aware of the magnitude of the task and the thoroughness with which it has been accomplished. At its conclusion the Academy will posses more accurate and complete information about the existing medical facilities and services for children, or their lack, than has ever before been accumulated.

The immediate problem ahead is the utilization of this knowledge. Dr. Parran in addressing the opening session of the Fifth International Pediatric Congress in New York said, "The American Academy of Pediatrics took upon itself a heavy responsibility in making the Study. For that step inevitably obligated them—as I am sure the Academy members realize—to take a second and far more difficult step; namely, to use this knowledge to develop a nationwide program of child health services." This would seem to be the challenge which faces the Academy, not only from Dr. Parran but from all those who invested money, time, and effort in the Study, and from the public as well, which is looking forward to something tangible to come out of the reports they have heard. Not only is the prestige of the Academy at stake, but in a way the prestige of private medicine is also at stake. If we are to succeed, and succeed we must, the cooperation and help of every member of the Academy are going to be needed even more than they were in the Study.

Concern has been expressed by some as to the over-all policy which should guide the Academy in its efforts to put into effect specific projects for the improvement of child health. What is to be our future relationship in this work with government agencies, specifically the U. S. Children's Bureau and the U. S. Public Health Service? Are projects for improving pediatric care to be carried out within the framework of the private practice of medicine, or it is anticpated that there will be a rapid broadening of the field of governmental coverage? What is to be our working relationship with the American Medical Association and other medical agencies? Is it to be recognized that there are varying problems within different states so that it will be necessary to develop broad programs which may be modified in the individual states? These are pertinent questions and deserve frank answers insofar as our present knowledge and experience permit. Most of them have been given serious consideration by the members of both the Committee on the Study of Child Health Services and the Committee on the Improvement of Child Health, as well as by the Executive Board and the other officers of the Academy.

To my mind there should be no question about continued cooperation with the Children's Bureau and the U. S. Public Health Service in the Academy's follow-up program on the same or a similar basis as proved so effective in the conduct of the Study. Many

projects will require the expenditure of ınds which the Academy does not have but which the governmental agencies do have. The present program of the Committee on the Fetus and Newborn is a case in point. This includes a proposal that standardly equipped premature stations be set up at strategic points in each state, and that nursing personnel be specially trained in the care of prematures. Funds for this program would come from the Children's Bureau through the maternal and child health divisions of the State Health Departments. Obviously this is a most desirable program, but for attainment it requires cooperation, and the utilization of what each group is best prepared to contribute. Unquestionably there will be many similar projects where a joint effort will be essential if the goal we have set for ourselves is to be achieved or even approached.

It has been stressed that one of the most important results, if not the most important, to come out of the Study will be the state reports prepared by the State Chairmen themselves. It is hoped that in each state this report will form the basis for analysis as local needs, and for local action programs. That each state has its own purely local problem peculiar to the nature of its population, its geography, and its medical and health setup is clearly recognized. No over-all national program can provide for the requirements of all the states. The extent, therefore, to which state reports are utilized for independent programs in conjunction with those of national origin will determine in no small measure the returns from the efforts expended in the Study itself. I am sure it is not the policy of the Academy to assume the role of telling any state what it should do, although the Committee on the Improvement of Child Health and its executive staff will stand ready to provide assistance and information to any state upon request.

How programs are carried out within the state, whether originating at state or national level, is obviously a matter for local decision. In most states Academy members function not as committees of the Academy but as members of committees of state or county medical organizations. It follows, therefore, that the approval and support of these organizations are essential to the successful institution of any child health programs. It has been my experience that such cooperation is invariably forthcoming if the proposal has merit and if its purpose is clearly understood.

As I see it, then, answers to the questions propounded earlier may be summarized by saying that there should be planning at both national and state levels. Individual states will determine projects suitable to their needs. Projects should be planned in cooperation with the Children's Bureau and the U. S. Public Health Service wherever there is overlapping of interests. The cooperation of state and county medical associations should be enlisted in the carrying out of specific projects within states.

It is not within the scope of these remarks to discuss the specific projects which are most likely to be revealed by the Study as suitable for immediate attack. Suffice it to say that the Committee on the Improvement of Child Health has been given one of the most difficult and yet one of the most important tasks ever assigned to an Academy committee. Because the work of this committee will extend into new fields of endeavor, it has been necessary to proceed cautiously with organizational details and definition of functions. While the assignment of the Study Committee was for a specific undertaking which will be completed within the next few months, the work of the Committee on the Improvement of Child Health has no such limitations. Rather it should be looked upon as a continuing committee with a long range program. I am sure the Academy views with satisfaction the appointment of Dr. John Hubbard as full-time director of the executive staff to serve this committee.

It is inevitable that the expanded program which the Academy has undertaken should create new problems. One of these is the matter of finances. Obviously the Academy could not provide from its usual resources the large sums required for the Study, or even the more modest ones proposed for the work of the follow-up committee. It has been necessary, therefore, to seek outside assistance. The justification for these requests rests upon the fact that the Academy is not asking for additional support of its own usual activities, but rather for support of a program of research directed toward the improvement of the health of all children. Neverthless, it is an Academy sponsored and an Academy controlled activity. If we are to ask for and expect assistance from others, it is important that the Academy support its own program to the limit of its ability in order that foundations and institutions may have tangible evidence of the Academy's seriousness of purpose.

The second problem has to do with the redefining of existing committee activities and responsibilities as they relate to the work of the newly created Committee on the Improvement of Child Health. Obviously it is essential that there be coordination to prevent overlapping and confusion of duties. This problem is now under consideration by the Executive Board and Committee on the Improvement of Child Health.

The final problem I would mention concerns the suggestion that the phenomenal growth of the Academy, both in size and in scope of activities, will, in the not too distant future, require additional administrative personnel. It has been proposed that the work now carried by the Secretary-Treasurer be divided into two parts, with two full-time persons sharing responsibilities. However, the employment of a full-time executive staff for the Committee on the Improvement of Child Health and related committees, together with our present arrangement of a Secretary-Treasurer and Assistant Secretary, would seem to satisfy our immediate needs. It is clear that anyone who had not grown up with the Academy, even though he possess the outstanding qualities of initiative and administrative ability of Dr. Grulee, could not discharge the responsibilities of his office with such apparent ease as he does. It is only when the burdens become too great for his capable shoulders that the proposed reorganization will need to be effected.

As the work and responsibilities of the Academy increase, other major problems will surely arise, but at the moment the three I have mentioned are among the most pressing. We should not be troubled because issues develop. These are a certain sign of progress. Let us beware when we have no problems.

As we start a new epoch marked by the birth of our journal, PEDIATRICS, it has seemed appropriate to pause for a summing up of our past accomplishments. From its modest beginning, the Academy has grown to a position of great prestige and of leadership throughout the nation in all matters pertaining to the health and welfare of children. In its large membership are representatives of all branches of pediatric endeavor, including private practitioners, teachers, research workers, and those from the field of public health. Its activities have now become sufficiently broad in scope to permit the full utilization of its inherent potentialities. If these are to be used to their utmost, there must be unity of action, broadmindedness, self-effacement, and willingness to contribute in time and effort for the attainment of common objectives. It should not be thought that the Academy has reached its goal, but rather that a good beginning has been made. To be a member of the American Academy of Pediatrics today is a privilege and an opportunity. I am proud to have had the honor of being its President.

IMMUNIZATION WITH COMBINED DIPHTHERIA AND TETANUS TOXOIDS (ALUMINUM HYDROXIDE ADSORBED) CONTAINING H. PERTUSSIS VACCINE

II. The Duration of Serologic Immunity

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A STUDY of immunization against diphtheria, tetanus, and pertussis by means of two injections of a mixture of aluminum hydroxide adsorbed diphtheria and tetanus toxoids containing H. pertussis vaccine was reported by Miller et al[1] in 1944. Two injections of 1.0 cc. each of this triple adsorbed mixture* were shown to lead to the production of unusually high levels of tetanus antitoxin and to uniform Schick negativity. On the other hand, the protection obtained against pertussis as gauged by estimations of serum agglutinins and by the results of clinical exposures was not entirely satisfactory. Two cases of pertussis following indoor exposure occurred in the group. It was therefore recommended that the total dose of 40 billion H. pertussis, contained in the 2.0 cc. of triple mixture injected, be augmented. This has been done, and in a second group of infants and children the original schedule of two injections of mixed adsorbed toxoids with vaccine, injected at a 12 week interval, was modified by an additional injection of a Phase I H. pertussis vaccine in saline* given midway between the above two injections (6 weeks after the first injection). Varying doses of vaccine were used for this additional injection—20 or 30 billion cells in the form of 1.0 or 1.5 cc. of a 20 billion per cc. saline suspension, and 40 or 60 billion cells in the form of a 1.0 or 1.5 cc. of a 40 billion per cc. saline suspension.

In the original study, herein referred to as Group 1, only one lot of combined diphtheria and tetanus toxoids (aluminum hydroxide adsorbed) containing H. pertussis vaccine was used throughout. In the complementary study in which additional H. pertussis vaccine was used, herein referred to as Group 2, a number of different lots of the triple mixture were employed. We were informed, however, by the manufacturer that all of the lots employed were prepared from diphtheria toxins containing 26 to 30 Lf units per cc. and from tetanus toxins containing 100,000 to 120,000 MLD per cc. After conversion into toxoids and adsorption with aluminum hydroxide, potency tests indicated that more than 2 units per cc. of both diphtheria and tetanus antitoxin were produced in guinea pigs. In each cc. of the final product were 20 billion Phase I H. pertussis.

METHODS

All serologic tests were carried out in our laboratory. For tetanus antitoxin titrations the technic of Glenny and Stevens[2] was employed. Mixtures of tetanus toxin† and

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* Product of the Cutter Laboratories, Berkeley, Calif.

† Kindly supplied in the dry state by Eli Lilly & Co.

properly diluted sera were incubated for one hour and then injected subcutaneously into mice weighing 14 to 18 gms. Two mice were used for each serum dilution. The test dose of toxin was that which when mixed with 0.001 American unit of Standard Tetanus Antitoxin* produced death from tetanus in 72 to 96 hours. Six control animals were also injected every day titrations of unknown sera were made. Experience with this technic for the past six years has proven its reliability. The same lot of dried toxin has been used during this period of time.

The macroscopic agglutinative technic of Miller and Silverberg[3] was employed in estimating H. pertussis serum agglutinin. It has been shown[4] that agglutinins, as determined by this technic, are carried for at least 6 years and occasionally for 10 years by the great majority of children who have been injected with 80 billion H. pertussis.

The diphtheria antitoxin titrations were performed according to the rabbit intradermal method of Fraser[5] as modified by Volk and Bunney.[6] Chinchilla rabbits were employed. Standard Diphtheria Antitoxin* controls were placed at the front and back of each rabbit.† Readings were made at four days.

The Schick tests‡ were controlled with heated toxin.

Age Incidence

The age at the time of the first injections in the two groups of children studied is shown in Table I. There were 64 boys and 62 girls in group 1, and 54 boys and 49 girls in group 2.

TABLE I

Age at Time of First Injection

	Group 1	Group 2				
		60 billion	70 billion	80 billion	100 billion	Total all doses
Less than 6 months	15	5	3	5	5	18
6 months to 1 year	76	12	8	33	15	68
1 to 2 years	12	3		4	2	9
2 to 3 years	6			3	1	4
3 to 4 years	4		1		2	3
4 to 5 years	3			1		1
5 to 6 years	2					
More than 6 years	8					
Total children	126	20	12	46	25	103

Group 1 received two injections of combined toxoids containing H. pertussis, bringing total dose of H. pertussis injected to 40 billion.

Group 2 received two injections of combined toxoids containing a total of 40 billion H. pertussis plus an additional injection of H. pertussis vaccine, bringing total to 60, 70, 80, or 100 billion.

* Kindly supplied through the courtesy of Dr. M. V. Veldee, National Institute of Health.

† The toxin was supplied in a fluid state by the Cutter Laboratories, Berkeley.

‡ Schick test and control was the product of Eli Lilly & Co.

Results

No children are included in this study who received any reinjections of any kind other than a Schick Test.

Because of the war it was not possible to observe every six months those children who received only two injections of the triple mixture (Group 1). Hence from 12 to 30 months after their second injection few determinations are recorded. In 1946, however, it was possible to find a considerable number of children who had received no "boosters" and to re-evaluate their serologic immunity. This paucity of determinations between the 12th and 30th month in Group 1 is regrettable. It makes difficult the comparison with the second group of children who received their injections during the war years and subsequently. Reference to the tables, however, indicates that a sufficient number of observations exist for direct comparison during the first year subsequent to completion of the courses of immunization.

Pertussis Agglutinative Reactions

With the almost complete disappearance of clinical pertussis in this community, the validity of substituting results of agglutination tests for secondary attack rates as a gauge of effectiveness of a vaccine is maintained for the following reasons. When the disease was prevalent—that is until 1942—we regularly obtained 4 to 8 new cultures of H. pertussis in the Children's Clinic every month. (B. parapertussis accounted for less than 5% of cases.) Employing an agglutination technic[3] by which no agglutination occurred in the sera of 90% children with negative histories for pertussis (or vaccine), periodic tests were made 2 or 3 times annually in a group of 554 immunized children. This study[7] was carried on for 4 years. "Booster" injections were omitted. When immunized children were exposed, bacteriologic, hematologic, and serologic means were employed to substantiate the exposures and such cases as resulted. Eighty-three household exposures occurred in children whose agglutinative titers were known. Twelve cases resulted and 71 children escaped. All of the cases occurred in children carrying serum agglutinins in a titer of 1-160 or lower. (Four of these children carried no agglutinins.) Among the 71 children who escaped, 47 had titers of 1-320 or higher and 24 had titers of 1-160 or lower. (Three had no agglutinins.) Expressed in another manner, the secondary attack rate in the group of children with titers of 1-320 or higher was 0, and in the group with lower titers or no agglutinins the attack rate was 33%. (The secondary attack rate following household exposure to pertussis is given by various epidemiologists as 75% to 90%.) Our conclusion, then, was: whereas, clinical immunity may exist in the vaccinated child in the absence of serum agglutinin, susceptibility does not occur in the presence of agglutinin in high titer.

This relationship between clinical immunity and serum agglutinin (as demonstrated by the technic described) has been confirmed and extended by the recent work of Sako[8]. He observed 149 household exposures in immunized children carrying titers of 1-320 or higher. All escaped. Three hundred and forty-four exposures in immunized children with titers of 1-160 down to zero resulted in 65 cases—a secondary attack rate of 19%. Furthermore, Sako had a sufficient number of exposed children with low titers to observe that the attack rate varied inversely with the serum agglutinin titer. For example 11.3% of 53 children with titers of 1-160 were attacked, 18.7% of 91 children with titers of 1-40 were attacked, and 33.3% of 27 children with no agglutinins were attacked. (In

contrast to this last mentioned 33% attack rate in sero-negative immunized children, Sako found an attack rate of 89.7% in his unvaccinated control group who had negative titers.)

It is therefore felt that ample evidence exists to validate the use of the agglutinative reaction—at least that technic employed by Sako and ourselves—as a measure of protection conferred by H. pertussis vaccine. To our knowledge no other serologic or skin reaction, proposed as a test of immunity to pertussis, has been compared so thoroughly with the clinical test of familial exposure.

TABLE II

PERTUSSIS AGGLUTINATIVE REACTIONS IN GROUP 1
(40 billion H. pertussis)

Titer	Titer months after second injection							
	>3 <6	> 6 <12	>12 <18	>18 <24	>24 <30	>30 <36	>36 <42	>42 <48
1–1280 or higher	19	24	7		1	1		2
1– 640	6	7	4			1	2	1
1– 320	4	4		1	2	5	3	4
1– 160	2	4	1			3	5	1
1– 80	7	4	1		1	1	4	1
1– 40	1	3			1	4		1
1– 20		3						
1– 10	1	1				2	2	2
0		1	1		1	4		
Total tests	40	51	14	1	6	21	16	12
Proportion and per cent with titers of 1–320 or higher	29/40	35/51	11/14		3/6	7/21	5/16	7/12
	72.5%	68.6%	78.6%		50%	33%		

161 agglutinative tests on 126 children (27 tested twice and 4 tested three times).
Only one child had more than one test after the 18th month.
There is only one test per child in each time interval.

In Table II are shown the agglutinative titers obtained in children in Group 1. They all received the total dose of 40 billion H. pertussis contained in two injections of 1.0 cc. each of triple mixture. No tests done prior to 3 months after completion of the course are included as, in our experience, 3 months may be required for maximum production of serum antibody after an adsorbed vaccine. It is apparent that about 70% of the children maintained titers consonant with clinical immunity (1-320 or more) for 18 months. There are, however, a good many children who apparently never produced high titers of serum antibody. After the war, when the group was retested again in substantial numbers after the thirtieth month, the proportion of children with high titers had decreased to 33%. No apparent further decrease was suggested by the limited data in the fourth year. In fact a number of high titers were observed. These may be attributed to chance contact with H. pertussis. However, only one of the 47 children tested after the

thirtieth month gave a history of intervening pertussis. Bacteriologic or hematologic confirmation was not obtained, but serum agglutinins in a titer of 1-1280 certainly corroborated the diagnosis.

As stated previously, the appearance of a considerable portion of low serum titrations between 6 months and 1 year after completion of immunization, led to an alteration in course of injections. H. pertussis vaccine in saline was administered between the two injections of the mixture and Group 2 was thus inaugurated. When this additional injection contained 20 or 30 billion cells (to bring the total dose of H. pertussis up to 60 and 70 billion), no apparent increase in the percentage of children with strong agglutinative reactions was observed. The dose of this additional injection was then increased to 40 or 60 billion H. pertussis (to bring the total dose to 80 or 100 billion). An increase in the percentage of children with high titers was then observed. Table III records the agglutinin levels so produced. It is to be noted that between 6 and 12 months after completion of immunization, 84.6% of the children had titers of 1-320 or higher. In Group 1 (Table II) 68.6% of the children had such levels at 6 to 12 months. The difference in percentage is 16.0% $\pm$ 10.5%, making the odds 6.5 to 1 against this difference being the result of random chance.

TABLE III

PERTUSSIS AGGLUTINATIVE REACTIONS IN GROUP 2
(80 and 100 billion H. pertussis)

Titer	Titer months after second injection of triple mixture				
	>3 <6	> 6 <12	>12 <18	>18 <24	>24 <30
1–1280 or higher	3	5	1	3	
1– 640	4	12	2	5	2
1– 320	3	5	3	5	2
1– 160	2	3	1	5	
1– 80	1			2	
1– 40		1			
1– 20				1	
1– 10					
0			1		
Total tests	13	26	8	21	4
Proportion and per cent with titers of 1–320 or higher	10/13	22/26	6/8	13/21	4/4
	76.9%	84.6%	75%	61.9%	

72 tests on 71 children.

It thus appears that our attempt to increase the proportion of children with initially high levels of agglutinin was not very successful. Doubling the dose of vaccine increased the percentage of high titers by only 16%. However, it will be observed that the number of very weak reactions in Group 2 is less noticeable than in Group 1.

Probably much greater increases in dosage would be necessary to increase further the proportion of children with high levels of agglutinin. We believe, however, that

a course of immunization which results in levels consonant with clinical immunity in over 80% of children is satisfactory. Recalling that the attack rate in immunized children with lower levels of agglutinin is only 20% to 30%, we probably have actually protected over 90% of the individuals injected.

It is difficult to compare clinically the results obtained with those of other workers because of the very low incidence of pertussis in this community. It is believed, however, that 2 cases of pertussis have occurred in Group 1. None is known to have occurred in Group 2.

Our agglutinative reaction has been employed by only a few workers as far as we are aware. With it Hamilton and Knouf[9] tested 64 children who had received a total dose of 100 billion H. pertussis contained in 2.5 cc. of fluid diphtheria and tetanus toxoids. The children were between 1 and 2 years of age when first injected, and their sera were titrated 3 months after the third injection. Eighty-nine per cent then carried agglutinins in a titer of 1-320 or higher. This percentage is slightly superior to the 84% we found 6-12 months after immunization.

Waddell and L'Engle[10] reported unusually high agglutinative titers in very young infants injected with 100 billion H. pertussis in saline. However, it would seem certain that the agglutinating antigen used was far more sensitive (perhaps salt sensitive) than that which we employ. Seventy-two per-cent of newborn infants were found to carry agglutinins before immunization and 36% had titers over 1-320. In our laboratory with our antigen only 46% of 108 cord bloods have been found to contain agglutinin and only 1% had a titer of 1-320.[11] This difference in antigen sensitivity—obviously a drawback to the agglutination test—makes impossible a comparison of our results with those of Waddell and L'Engle.

The extensive studies of Sako employing the serologic technic under discussion are of great interest. He began active immunization of infants at 2 weeks of age using a total of 40 billion alum-precipitated H. pertussis. In a very extensive field trial[12] he proved that a high degree of protection was obtained. He then compared[8] the agglutinin response to this product with the response to fluid (saline suspended) vaccine, and to combined diphtheria and tetanus toxoid, aluminum hydroxide adsorbed, containing H. pertussis vaccine. Titers of 1-320 or higher were found in: (a) 25% of young infants 2 to 4 months after 100 billion H. pertussis in saline; (b) 51% of young infants 2 to 4 months after 40 billion alum-precipitated H. pertussis (this percentage of high titers persisted up to 3 years); (c) 27% of young infants 2 to 4 months after 2.5 cc. of combined adsorbed toxoid vaccine (total H. pertussis 50 billion); (d) 39% of young infants 2 to 4 months after a course identical to that employed in our Group 2 (80 billion H. pertussis). Group (c) above is directly comparable with our Group 1, and Group (d) with our Group 2 except for the younger age of Sako's patients, and the shorter interval he allowed between the completion of immunization and the test. It is believed that both these factors favored our obtaining much higher percentages of high titers (see Tables II and III). Hence we are unable to agree with Sako[8] that young infants can "produce antibodies as a result of pertussis immunization just as well as older children." For support of our view we can also cite the findings of Hamilton and Knouf[9] in children 1 to 2 years of age (see above).

Tetanus Antitoxin Titrations

In Table IV are recorded the titrations of tetanus antitoxin in the sera of children who received only two injections of the triple mixture (Group 1).

TABLE IV

TETANUS ANTITOXIN TITRATIONS IN GROUP 1

Antitoxin titers	Antitoxin titers months after second injection							
	>3 <6	> 6 <12	>12 <18	>18 <24	>24 <30	>30 <36	>36 <42	>42 <48
1 unit or more	23	26	10		3	7	5	4
0.1 unit or more but less than 1 unit	11	12	5	1	2	15	10	8
0.01 unit or more but less than 0.1 unit					1			
Total tests	34	38	15	1	6	22	15	12

143 tests on 113 children (22 tested twice and 4 tested three times).
There is only one test per child in each time interval.
No child had more than one test after the 18th month.
Units refer to American units per cc. of serum.

These levels are unusually high, all determinations with one exception being 0.1 unit or more. As these children had received no "booster" injections of any kind (despite requests to return), these data demonstrate that the product contained a very potent tetanus toxoid. We know of no report describing such uniformly high levels of serum antitoxin for so long a period after primary immunization. Comparable long term observations in individuals who had received fluid tetanus toxoid [13,14] and in children who received alum-precipitated tetanus toxoid[15,16,17] reveal definitely lower levels. Yeazell and Deamer[15] found 18 of 31 children with 0.1 unit of antitoxin or more, 2 to 3 years after 3 injections of alum-precipitated tetanus toxoid. McBryde[17] found only 13 of 29 children over this level 30 months after 2 injections of the same product. The high levels shown in Table IV are therefore unique. Only one of 55 children immunized 2 to 4 years previously showed less than 0.1 unit of antitoxin per cc. of serum.

TABLE V

TETANUS ANTITOXIN TITRATIONS IN GROUP 2

Antitoxin titers	Antitoxin titers months after second injection of triple mixture				
	>3 <6	> 6 <12	>12 <18	>18 <24	>24 <30
1 unit or more	7	3	2	5	3
0.1 unit or more but less than 1 unit	6	2	2	16	4
0.01 unit or more but less than 0.1 unit				4	
Less than 0.01 unit				2	
Total tests	13	5	4	27	7

56 tests on 56 children. Units refer to American units per cc. of serum.

The tetanus antitoxin produced and carried in circulation by the children in Group 2 is shown in Table V. It is apparent by comparison with Table IV that not as many children carried very high levels initially and 6 children, at 18 to 24 months, carried less than 0.1 unit. It does not seem likely that the somewhat lower levels of antitoxin demonstrated in Group 2 are the result of the added injection of H. pertussis vaccine (competition of antibodies). A more plausible explanation is that some of the tetanus toxoid present in the several different lots of mixture used in Group 2 was not as potent as the toxoid present in the original single lot used for Group 1. It should also be pointed out that the two individuals whose sera contained less than 0.01 unit of tetanus antitoxin (see Table V) were less than 5 months of age at the time of their first injection.

Altogether in both groups we have titrated sera from 11 infants less than 6 months of age at the time of their first injection. (Titrations were done 18 months or more after their second injection.) Whereas 8 of these infants produced 0.1 unit or more, 3 did not. It would seem that very young infants often may not respond to tetanus toxoid as satisfactorily as older infants.

It is not known how much antitoxin in the circulating blood is necessary to protect against tetanus. The inocula of tetanus spores in any wound obviously vary tremendously. The factors inducing germination and toxin production (decreased oxidation-reduction potential) likewise vary depending on the contaminants and the local oxygen supply. Hence very low concentrations of circulating antitoxin should protect against tetanus in some wounds and very high concentrations conceivably might not protect in others. Shock, interference with local blood supply, or massive contamination, all facilitate toxin production.

The only clues which point to the existence of a protective range, not "protective level," of tetanus antitoxin are those based on (a) passive protection in man with tetanus antitoxin and (b) infection of actively immunized animals. The conventional "prophylactic" dose of tetanus antitoxin, 1500 units, results in the immediate presence of 0.1 to 0.5 units of antitoxin per cc. of serum.[18,19] Thereafter (providing the individual is not sensitive to horse serum), the amount of antitoxin will decrease to between 0.01 and 0.1 at the end of 2 weeks.[19,20] Obviously the size, and hence blood volume, of the individual is a factor. It has been assumed, therefore, that since 1500 units of tetanus antitoxin may protect temporarily against minor infections, 0.01 to 0.1 unit of circulating antitoxin may protect against minor infections. The word "may" is used advisedly. Spaeth[21] has recorded instances of rapidly fatal tetanus in individuals who received this "prophylactic" dose.

Guinea pigs have been actively immunized with tetanus toxoid, their serum antitoxin determined, and then their immunity challenged with spores and calcium chloride.[22,23] Complete protection was associated with levels of 0.2 unit to 0.5 unit tetanus antitoxin per cc. serum.

The view is often stated that the concentration of circulating antitoxin in the actively immunized individual is of secondary importance. Of primary importance, it is said, is the "basic immunity" conferred—the enhanced capacity to produce antitoxin rapidly in response to a secondary stimulus. It is postulated that tetanus toxin produced in the wound acts as a stimulus. An analogy is drawn to the well-known antigenicity of diphtheria toxin—the ability of the toxin in a Schick test dose to stimulate enough antitoxin to neutralize itself by the 5th to 7th days.[24] Experimental evidence, however,

does not support this thesis. Infection of actively immunized guinea pigs with tetanus spores either failed to increase their serum antitoxin[25] or the demonstrable increase was deferred 10 days.[26] Clinical evidence likewise is not supportive. If tetanus toxin were a potent antigen—and not such a rapidly acting poison—attacks of tetanus should confer immunity. However, second attacks have been described.[27] Furthermore an attack of tetanus, whether treated with antitoxin or not, fails to confer "basic immunity." The individual who has had tetanus does not respond to an injection of toxoid with a rise in antitoxin as does a previously actively immunized individual.[23,28,29] Toxin absorbed during an attack is apparently insufficient in amount to "sensitize" the immune mechanism.

The writers, therefore, cannot subscribe to the view that a "basic immunity," which will be rapidly increased by an inoculum of spores, is all that is desired. Neither can reliance be placed on this basic immunity's being rapidly raised by a "booster" of toxoid simply because the said stimulating injection may be omitted. The child may not tell the parents, the parents may not call the doctor, and the doctor may not be prepared to give toxoid. It is, therefore, affirmed that the goal in active immunization against tetanus is to attain and maintain at all times a level of tetanus antitoxin which may be protective in itself, and the higher the better. Thus the most potent and persistent antigenic stimulus should be used and biennial stimulating injections insisted upon. For these reasons, the high levels of tetanus antitoxin here demonstrated after the use of aluminum hydroxide adsorbed tetanus toxoid are probably more satisfactory than any previously reported.

Schick Tests

It must be confessed at the outset that Schick tests were not performed prior to immunization except in a few instances in children over 3 years of age. We have assumed, because of the age range of our patients and the low incidence of diphtheria in the community, that the very great majority would have been Schick positive had they been tested. Probably a few of the younger infants might have been Schick negative by virtue of transplacentally acquired antitoxin. If so, the results reported below are all the more significant—the diphtheria toxoid injected was potent enough not to be interfered with by any passively acquired antitoxin. A few of the older children may have been Schick negative by virtue of street immunization. A record of a previous negative Schick test

TABLE VI

Schick Tests, Group 1 and Group 2
(All Schick Tests were negative)

	Interval after completion of injections								Total Children	Total tests
	3–6 months	6–12 months	1–2 years		2–3 years		3–4 years			
	1st test	1st test	1st test	2nd test	1st test	2nd test	1st test	2nd test		
Group 1	114					15		18	114	147
Group 2	71	11	4	6		2			86	94
Total									200	241

was actually discovered in one 6 year old child after immunization was completed. Four other older children were known positive reactors. Subsequent to immunization no positive Schick tests have been observed in 200 children in Group 1 and Group 2. (See Table VI). Forty-one children were retested two to four years later. All were negative.

These entirely satisfactory results may be compared to those obtained by Sigurjonsson[30] in the remote community of Iceland where only 10% of children under 13 years of age were naturally Schick negative. He employed two injections of aluminum hydroxide adsorbed diphtheria toxoid at a 3 week interval. Seven months later 96% of the injected children were Schick negative. Four years later 74% were still Schick negative.

Diphtheria Antitoxin Titrations

Diphtheria antitoxin titrations were performed on the sera of 20 children in Group 1 and 26 children in Group 2. In view of the fact that almost all the children in Group

TABLE VII

Diphtheria Antitoxin Titrations
Group 1 and Group 2

Titer	Antitoxin titers months after second injection							
	>3 <6	> 6 <12	>12 <18	>18 <24	>24 <30	>30 <36	>36 <42	>42 <48
1 unit or more	3	6	1	5	1	7		1
0.1 unit or more but less than 1 unit	3	3		5	3	1	4	2
0.01 unit or more but less than 0.1 unit						1‡	1*	
Total tests	6	9	1	10	4	9	5	3

47 tests were made on 46 children (20 in Group 1 and 26 in Group 2). One child was tested twice. He had 1.0 unit in the 3–6 month period and also in the 6–12 month period.

‡ No Schick Test was done.

* Subsequently had negative Schick Test.

1 were tested 2½ years after their second injection and all the children in Group 2 were tested within 2½ years of their second injection, comparison of the antitoxin levels in the two groups is not possible. The results of these titrations in both groups are shown in Table VII. The diphtheria antitoxin demonstrated is obviously due not only to two injections of the triple mixture containing diphtheria toxoid, but also to the toxin in the Schick test, which was regularly scheduled 3 months after the second injection. Five children, however, did not receive this added stimulus. Two had levels of 0.1 unit or more and three had more than 1.0 unit per cc. When repeat Schick tests were performed, blood for antitoxin titration was always obtained the day of the test and not subsequent thereto.

It will be observed in Table VII that all of the 25 titrations done up to 2 years after completion of immunizations revealed diphtheria antitoxin in a concentration of 0.1 unit per cc. or more. Between 2 and 4 years after immunization, 19 of 21 children tested showed more than 0.1 unit, and the remaining 2 showed between 0.01 and 0.1 unit.

In other words the initial high levels were well maintained. This admittedly fragmentary evidence compares favorably with the reports of other authors.

The classical study of Volk and Bunney[6] is important because of the great number (2487) of children observed. As we employed their technic (as Kendrick[31] did), direct comparison can be made with their results. The very highest levels of diphtheria antitoxin achieved by Volk and Bunney were those in children of all ages, who had been injected with 3 doses of fluid toxoid and who were known to have 0.001 unit of diphtheria antitoxin or more *before* immunization. Ninety-six per cent of this group consistently maintained more than 0.1 unit of diphtheria antitoxin per cc. for 3 years.

As the great majority of our children were in the 6 to 12 month age group, we can assume safely that the majority were Schick positive and that the minority who might be Schick negative were so by virtue of transplacentally acquired antitoxin. Thus, when we compare antitoxin in our small group with the most favorable figures of Volk and Bunney, we are handicapped by both a lack of basic immunity and a potentially interfering passive immunity. Nevertheless the maintenance of high antitoxin levels in our group is of the same order of magnitude.

As Kendrick's subjects were in the same age range as ours, her report[31] of diphtheria antitoxin titrations, following 3 injections of combined alum-precipitated diphtheria toxoid and pertussis vaccine, is strictly comparable to ours. Five to 20 months after immunization, 82.4% of 145 children were shown to have 0.1 unit or more of diphtheria antitoxin per cc. As we observed no children with less than 0.1 unit until the 30th month, it would appear that the triple antigen we employed was fully as potent as the alum-precipitated double mixture of Kendrick.

Leach, Jensen and Poch[32] employed aluminum hydroxide adsorbed diphtheria toxoid more than 10 years ago. One month after a single injection, 81% of the children were found to have 0.1 unit of diphtheria antitoxin per cc. Whereas, attempts to immunize with a single injection are no longer recommended, it is of some interest to know that aluminum hydroxide adsorbed diphtheria toxoid was tested for this purpose and was found to be so effective. It is curious that this report did not stimulate more interest in aluminum hydroxide as an adsorbent for diphtheria toxoid.

Ross et al[33] reported recently on diphtheria antitoxin production induced by two injections of protamine-precipitated toxoid. Nine to 15 months after immunization 90% of his subjects had 0.1 unit of antitoxin or more per cc. This product would, therefore, appear to be a very potent antigen.

Numerous other reports[34–38] of diphtheria antitoxin titrations following fluid or alum-precipitated toxoid, alone or combined, will not be reviewed. In none have we found antitoxin levels superior to those described above or to those reported in our own study.

Reactions

It so happened that no severe general or local reactions occurred in any children included in the groups here reported. Local induration at the site of injection of the triple mixture and minor febrile reactions associated with vomiting occurred occasionally as after any immunization procedure. However, as many more children than those studied serologically received two injections of the triple mixture, the over-all incidence of reactions is known. One sterile abscess was observed in 536 children who received the original single lot of triple mixture according to the schedule of Group 1. Nine sterile abscesses were observed in 877 children who were immunized according to the schedule of Group

2. Different lots of the triple mixture were responsible though one lot was associated with three abscesses. (One child unfortunately had abscesses following each of her two injections.) As the great majority of children had two injections of the triple mixture, the over-all incidence of sterile abscesses was 10 for approximately 2800 injections (1413 children). This is 0.6% per child or 0.3% per injection. Thus the incidence of sterile abscesses was not high. This compares favorably with the incidence of sterile abscesses following alum-precipitated products.[12]

In most instances of abscess it was evident that the injections had been made very superficially. Fatty acid crystals indicating fat necrosis were demonstrated several times. Subsequently, therefore, the injections were deliberately given intramuscularly. The lateral aspects of the thighs were used in infants and the deltoid muscles in older children—with the needle pointing distally as Sauer[39] advised. Although care was taken not to have the antigen dripping down the needle at the time of injection, the "dry needle" technic of Sako[12] was not employed. With these precautions further abscesses due to fat necrosis have been avoided.

One severe general reaction following the first injection of the triple mixture was observed in a seven month old infant. The child's temperature rose within 12 hours to 39.4° C., and a convulsion occurred. The temperature returned to normal within 36 hours. A history of febrile convulsions in both mother and sister was later obtained. Physical examination and mental development 6 months later were normal.

Discussion

Because stress is laid in this paper on the duration of immunity conferred, it is not to be assumed that reinjections of single or combined antigens are not advised. The children composing the groups reported are only those who did not return earlier for advised reinjections. In this clinic it is our routine that (a) H. pertussis vaccine, 20 billion, be reinjected 2 years after the original course, (b) tetanus toxoid be reinjected biennially, and (c) that a Schick test be done at six years of age. It is pointed out, however, that as "boosters" are often neglected, antigens with staying qualities are to be preferred to those with less durable immune responses.

Mention should be made of the fact that reinjections of triple mixture (or tetanus toxoid and H. pertussis vaccine) were given after blood had been drawn for the titrations described in this paper. Sera from 45 children were retitrated one week thereafter. All showed marked increases in tetanus antitoxin titer, usually to over 10 units. Similar increases in H. pertussis agglutinin titer were observed in 9 of 10 sera tested. These serologic responses to reinjections furnish additional evidence of the immune status of the children studied.

The high antitoxin production and prolonged maintenance thereof resulted, we believe, from the relatively long, 3 month, interval between the two injections of mixed toxoids together with at least one of the following factors: (a) the high potency of the toxoids, (b) the adsorbent aluminum hydroxide, or (c) the presence of a bacterial suspension in the toxoids. The superiority of a 3 month interval over shorter ones in the production of high diphtheria and tetanus antitoxin titers has been demonstrated amply in commercial antitoxin production in horses[40] as well as in immunization of children.[41] However, as the high and enduring tetanus antitoxin titers here reported are superior to those we have found previously[41] after three injections of alum-precipitated toxoid at 3 month intervals, these high levels cannot be accounted for by the long interval alone. Either the toxoid itself

was more potent, the aluminum hydroxide effected a slower release of the antigen, or the bacterial suspension present potentiated the toxoid. This latter possibility is not unlikely in view of Ramon's classical observations[42] on the potentiation of toxoids by particulate material. Furthermore the literature contains two fairly clear cut examples of potentiation of tetanus toxoid by typhoid vaccine.[43,44]

The results of our pertussis immunization program are described solely in terms of serologic immunity because of the local infrequency of exposure to the disease. The agglutinative technic used, however, seems worthy of reliance because it has been correlated with clinical immunity by others as well as by ourselves. Fairly good serologic immunity was obtained with the 40 billion H. pertussis contained in two injections of the triple mixture. Seemingly better serologic immunity was obtained when this dose was doubled by means of the intervening injection of saline suspended vaccine. With a total dose of 80 to 100 billion it is believed that about 90% of the children were protected. To protect a greater percentage probably much large doses or more antigenic strains would be necessary. From our own experience, we cannot conclude that adsorption of H. pertussis vaccine on aluminum hydroxide is a substitute for a large total amount of bacterial antigen.

Summary

One hundred and twenty-six infants and children were injected with combined diphtheria and tetanus toxoids (aluminum hydroxide adsorbed) containing H. pertussis vaccine, 20 billion per cc. Two injections were given at a 12 week interval. No reinjections were made in the 4 year period of observation.

Pertussis agglutinative reactions consonant with clinical immunity were obtained in 70% of the subjects during the first year after injections. In the subsequent 4 years serologic immunity waned in 40%. High levels of tetanus antitoxin were demonstrated during the first year. From 2 to 4 years thereafter 98% of the subjects maintained levels of 0.1 unit or more. Such prolonged maintenance of high antitoxin titer has not been described previously as far as we are aware. Schick tests were uniformly negative. Those children retested 2 to 4 years later also all reacted negatively. Diphtheria antitoxin titrations performed prior to Schick retests showed that 90% of the subjects carried 0.1 unit or more.

Because it was felt that the serologic immunity against pertussis in the above group was not optimal, the routine was altered by increasing the dose of H. pertussis vaccine. Midway between the two injections of triple mixture an injection of H. pertussis vaccine in saline was given. One hundred and three subjects so injected have been observed for two and one-half years.

The addition of 40 or 60 billion H. pertussis (to bring the total dose to 80 or 100 billion) resulted in the production of high agglutinative titers in 84% of the children. Tetanus and diphtheria antitoxin titrations in this second group of children were similar to those in the first group. No positive Schick tests were observed.

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SPANISH ABSTRACT

Inmunizacion por el uso combinado de toxoides difterico y tetanico. (Hidroxido de Aluminio ab) conteniendo al mismo tiempo vacuna H. pertussis. La duracion de la inmunidad serologica.

Ciento veintiseis niños y lactantes fueron inyectados con toxoido difterico combinado con tetanico añadido con vacuna pertussis a razon de 20 billones por centrimetro cubico. Dos inyecciones fueron hechas con doce semanas de intervalo. Ningun reinyeccion fue hecha posteriormente durante los cuatro años del periodo de observacion.

Reacciones de aglutinacion pertussis concordantes con la inmunidad clinica fueron obtenidas en el 70% de los sujetos durante el primer año despues de la inyeccion. En los cuatro años subsiguientes la inmunidad serologica se mantenia en el 40%. Altos niveles de antitoxina tetanica fueron demostrados durante el primer año. De dos a cuatro años despues 98% de los sujetos mantuvieron niveles de 0.1 inmunidad o mas. Tales titulos elevados de concentracion antitoxinica no habian sido descritos con anterioridad. Las pruebas de Shick eran uniformemente negativas; todos los niños en que se repitio la prueba dos o cuatro años despues reaccionaron negativamente. Pruebas con antitoxina difterica realizadas antes de la prueba de Schick mostraban que un 90% de los sujetos mantenian 0.1 o mas de unidad porque se penso que la inmunidad serologica contra pertussis en el grupo arriba mencionado no era optima, la rutina fue alterada mediante el aumento de la dosis de la vacuna de H. pertussis. Mediando entre las dos inyecciones de la triple mezcla de H. pertusis era aplicada en una solucion salina. Ciento tres sujetos inyectados en esta forma han sido observados durante dos años y medio.

La adicion de 40 a 60 billones de H. Pertussis (para mantener una dosis total de 80 a 100 billones) resulto en la produccion un alto titulo de aglutinacion en el 84% de los niños. Toxina antidifterica y antitetanica en este segundo grupo de niños mostro un average similar a los del primer grupo. No se observaron pruebas de Shick positivas.

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THE PUBLIC HEALTH NURSE, THE PHYSICIAN'S ALLY

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WHEN schools for nurses were established in 1879 at Bellevue, New Haven and Massachusetts General Hospitals, the nursing profession was finally recognized in America as an important adjunct to the medical profession. Prior to that time nursing care of the sick was largely in the hands of incompetent and untrained women who were not highly regarded by physicians or the laity. During the first decade after the three training schools were opened the majority of the trained nurses were engaged in private practice in homes, usually in the homes of the rich. Later some were employed as private duty nurses in hospitals.

It was not until 1877 that the Women's Branch of the New York City Mission first sent trained visiting nurses into the homes of the sick poor to do bedside nursing; four years later the New York Ethical Society placed four nurses in the New York dispensaries to do not sick nursing but health nursing. The first visiting nurse association, founded for the purpose of sending trained nurses into homes, was started in Buffalo in 1885; and in 1886 similar associations were established in Boston and Philadelphia. Relatively few trained nurses devoted their energies to the public health field during the next two decades. However, private or non-official agencies interested in the control of tuberculosis, syphilis, acute communicable disease and maternal and child care played a strategic role in the development of professional public health nursing. These agencies, usually organized on a local basis, worked closely with private physicians and with groups interested in social work. Some non-official public health nursing agencies succeeded, through special studies, to develop nursing standards which have been of inestimable value in the development of the work of the public health nursing group.

The pioneer stage in public health nursing ended in 1912, for by that time the work had been accepted as essential in many communities. It was in 1912 that the National Organization for Public Health Nursing was founded. Since then certain national and world events have had a definite bearing on the progress which has been made in public health nursing. It was during World War I that the United States Public Health Service organized the Division of Public Health Nursing; and, in 1918 when government funds were provided to assist the States in the control of venereal diseases, public health nursing was distributed to all sections of the country. This was followed in 1921, through federal grants under the Sheppard-Towner Act, by grants to aid the States in the public health nursing of maternity and infancy. Since funds have been provided by public and private agencies for the employment of public health nurses, the number has grown steadily. The number of public health nurses, including nurses in industry, has increased to about 30,000 in 1943. In spite of this increase there are still about 800 counties and cities with no public health nursing service.

Since 1935 nurses engaged in public health nursing have been required to meet certain qualifications prepared by the Education Committee of the National Organization for Public Health Nursing. Qualified public health nurses are required to have high school graduation or its educational equivalent as determined by the State Department of Educa-

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tion. Graduation from an accredited school of nursing connected with a hospital having a daily average of at least 100 patients is essential. In addition to the fundamental nursing education, special preparation in public health nursing covering at least one academic year is recommended. This special training must be supplemented by an additional year's experience under qualified nursing supervision in a public health nursing service in which family health is emphasized. Inasmuch as a public health nurse frequently works alone it is essential that she have ability in organizing the nursing service in a community, and possess special aptitude for working with lay and professional groups. Just as the physician must keep himself informed on new and improved methods of diagnosis and treatment, the public health nurse is expected to avail herself of educational opportunities that are made available to her for advanced study.

Family health is the goal of all public health nursing. The family is recognized as the social institution which perhaps has the greatest influence upon its members. It is universally recognized that there are a number of social functions of family life which have survived through changing conditions. The four principal functions are these: the family renews physical life and so perpetuates the life of the race, the family contributes to the economic life of society, the family brings up and educates the children, the family develops in its members forces necessary for the creation of valuable mutual relations.

In our complex society, it is not possible for the family to fulfill all of its functions alone, so community agencies are developed to aid in carrying out its purposes. The wise use of such community resources contributes greatly to family health. Public health nursing is part of the whole community, medical, educational and social welfare program. The nurses are responsible for recognizing health problems and related social problems of families and individuals, and for assisting them to formulate and carry through plans for the protection and promotion of their own health, with the aid of community resources. The public health nurse's approach to the family is that of nurse, teacher, counsellor and friend. She enters the home as a guest of the family. She is guided by a sincere interest in the family, and a desire to make her knowledge and skill available to them. The pediatrician, obstetrician or family physician rarely encounters a medical or health situation in his patient that can be satisfactorily handled without giving consideration to the family of which the patient is a member. Physicians engaged in the care of mother and child are fully aware of the fact that good maternal service is not assured if such care is limited to excellent delivery service in a hospital; the successful feeding of infants is not accomplished alone by an examination and directions for a formula; emotional disturbances appearing in school are not solved by advising the child or the teacher alone. The solution of these and other problems are greatly aided with the assistance of the public health nurse.

Maternity service is considered one of the important functions of a public health nursing agency. Relatively few physicians appreciate the scope of the public health nurse in maternal services. The services available to the community can be briefly summarized. The public health nurse endeavors to get in touch with all prospective mothers as early in pregnancy as possible. She assists in securing medical and dental supervision for the mother during the maternity cycle. She assists in planning and preparing for confinement and in securing a postpartum medical examination of the mother. She gives or assists in arranging for nursing care throughout the maternity cycle, including assistance at home confinements and care to the mother and baby during the postpartum period. She teaches

through demonstration and supervises care given by relatives, attendants and midwives. She instructs the mother and father and helps them carry out medical advice regarding the hygiene of pregnancy and of the postpartum period and in the care and feeding of the baby. She observes the physical and emotional health of all members of the family, and assists in securing care when necessary. She refers the baby to the family physician, to a pediatrician, or to a child health conference for continued supervision. These services are offered not only to families unable to employ their own physician but also to those who do voluntarily employ a physician. In many instances the physician periodically examines and advises his maternity patient but is unable to supervise the home environment. A request and instructions from the physician will enlist the aid of a public health nurse in the home supervision of his patient before and after the delivery.

The public health nurse plays an important role in the field of child health. Many parents are thoroughly schooled in the procedures they must follow to assure their infants and pre-school children the ideal medical and social guidance. Unfortunately others are derelict in this respect because of ignorance or indifference. Unless the public health nurse participates in the direction of this family the child is likely to suffer. Through the voluntary or official organization of a child health service the nurse can perform a number of essential functions. The nurse assists in securing complete birth registration in the community. She assists in securing medical supervision, dental examinations, and the correction of defects for every child. The nurse gives or arranges for nursing care for sick children in homes. She teaches through demonstration, and supervises the care which is given by relatives and attendants. For example, in the home care of the rheumatic child the nurse under the direction of the physician gives instructions and demonstrates simple procedures such as bathing, taking the temperature, pulse and respiration. She assists the child and the family to adjust to the situation and surroundings and points out ways for keeping the child quiet, happy and occupied.

Thoroughly familiar with the immunization program of infants and young children the nurse instructs the parents to attend to this important preventive procedure at the right time. Experience has repeatedly demonstrated that the highest percentage of immunized children occurs in communities where public health nurses are employed. The nurse also assists in the control of communicable diseases through teaching the recognition of early symptoms and the importance of isolation. The nurse is particularly active in the programs for the prevention of handicaps and in the care, education and rehabilitation of handicapped children. Free access to the home offers great opportunities for education against accidents and dangerous neglect of minor infections and defects.

The nurse assists the family to carry out general and specific medical advice concerning the proper feeding of children, and emphasizes the values of breast feeding. She interprets the physician's orders to the family concerning the daily regimen of the child, and teaches the parents the desirability of the early establishment of sound health habits.

The school health program is that phase of health service which considers the well-being of the school age child and his education for healthful living. The public health nurse in the school considers the child as a member of the family, as well as of the school group. She assists parents to provide a favorable environment and the health services necessary to promote and protect the health of the entire family. The function of a public health nurse in a school health program is to participate in formulating and developing a health program that will be educational. She utilizes all the activities and situations within the school and the community for the development of the physical, mental and emotional

life of the child. The nurse acquaints parents, teachers and pupils with the indications of good health. She helps them to develop an ability to recognize deviations from the normal, and to direct their behavior accordingly. Through home visits and individual conferences in the school, the nurse helps the parents to recognize the importance of the early establishment of habits which contribute to health. The nurse works with parents, assisting them to assume the responsibility for health supervision of the family. She may also cooperate with the local physicians in an effort to develop an interest in a program of health supervision for their private patients.

Not only does the public health nurse assist in securing physical examinations of pupils, but she also interprets the findings of the health examination by the school physician or private physician to the teachers, parents and pupils; and, when necessary, assists parents in arranging for the correction of defects. She acquaints parents with community facilities for the correction of defects and urges care by the family physician when possible. The public health nurse is prepared to assist a private physician or a clinic physician in observing a child in school for any physical or emotional condition that requires repeated observation. The rheumatic child after a long rest at home is finally returned to school but the physician is not certain that the school environment will be tolerated. Here the nurse not only can assist the child but inform the physician as to the type of adjustment the child is making. In countless ways the public health nurse influences the health of the school child. Her value is greatly enhanced when she can cooperate with the pediatrician or family physician.

Public health nursing service is now available in many communities. Not all communities have made full use of these services. Experience has shown that the institutional nurse is well known to the physician because of the frequent contact with the nurse. On the other hand, public health nurses working in schools, industries or in the homes are much less likely to have frequent conferences with the practicing physician, although they work closely with physicians and only under their orders. Consequently they can be of maximum benefit to the patient and to the family if the physician directs the nurse in preventive services as well as follow-up care. Public health nurses are generally connected with visiting nurse associations, health departments, or boards of education. The nursing service can be readily contacted through these control offices. The nurse in turn is always prepared to interview the physician either in person or over the telephone.

The institutional nurse is indispensable in the medical care program conducted in approved hospitals. The public health nurse must be considered in a similar light in meeting the medical needs in home, school and industry. To bring about the fullest realization of the public health nurse's contribution to health, close cooperation must exist betweeen the physician, hospital and public health nurse. This can be easily accomplished if it is clearly understood that the public health nursing service is available to all, not only to the "sick poor" as in former days.

Unfortunately it is occasionally reported that a physician objects to the presence of a public health nurse on the ground that there is interference with the management of his patients and a desire to direct the care of the patient to some other physician or clinic. Such a procedure on the part of the public health nurse is absolutely contrary to the policy of the public health nursing organization. Indiscretion on the part of an individual nurse is undoubtedly responsible for such a complaint occasionally made by physicians. The physician is confronted with similar attitudes on the part of neighbors or even fellow practitioners.

The real function of the public health nurse is to supplement the physician's services. This type of cooperation invariably benefits the physician. The nurse brings to the physician's attention the patient's problems that might otherwise lead to less satisfactory relationship between patient and physician. The public health nurse also refers to physicians patients who in her opinion need medical attention but who frequently avoid physicians. Confidence in and cooperation with the nurse usually proves to be of inestimable value to the doctor as well as to the patient.

Public health nursing, like education, is paid for through taxation, endowments and gifts and is therefore available to all. The benefits of public health nursing should not be denied the underprivileged but such services are equally effective in the more fortunate families.

SPANISH ABSTRACT

La enfermera sanitaria, aliada del medico

La enfermera sanitaria fue una realidad desde 1877 en que la mision de la ciudad de New York envio por primera vez enfermeras entrenadas a visitar los domicilios. En los primeros años el servicio de enfermeras sanitarias tenia un caracter privado, es decir, que no eran agencias oficilaes, ocupandose sin embargo de trabajos especiales en el campo de la tuberculosis, la sifilis, las enfermedades agudas comunicables y los cuidados de proteccion materno-infantil.

La etapa de preparacion de la enfermera sanitaria termino en 1912 en que su trabajo fue ya reconocido y aceptado como un elemento esencial en muchas comunidades de la Union. Desde la guerra Mundial I en que los Estados Unidos organizaron en su Division de Salubridad el Departamento de Enfermeras, el numero ha crecido extraordinariamente llegando a 30,000 enfermeras en 1943.

La salud de la familia es el objectivo del Servicio de Enfermeras Sanitarias, que aproxima la familia a la enfermera convirtiendola en su maestro, consejero y amigo. La enfermera penetra en el hogar como huesped de la familia, a la que guia con un sincero interes y verdadero deseo de ofrecerle sus conocimientos y las ventajas de su especializacion.

El servicio de maternidad esta considerado como una de las funciones mas importantes de la agencia de enfermeras sanitarias. El servicio de enfermeras sanitarias toma contacto con la madre embarazada lo mas tempranamente posible, ofreciendole asistencia a la mujer antes y despues de su parto, tambien extiende sus servicios al nuevo bebe conectando al niño y a la madre con el servicio medico privado u hospitalario. Bajo la direccion del medico ella lleva a cabo las instrucciones para asistir a la madre y al niño u otro miembro de la familia.

En el campo de la atencion correspondiente a la proteccion infantil la enfermera sanitaria juega un importante papel, controla y supervisa las necesidades medicas del niño, examenes dentales, correccion de defectos etc. La enfermera facilita los arreglos necesarios para el cuidado de los niños enfermos en las casas. Enseña al traves de demostraciones como deben realizarse estos cuidados por los familiares de los mismos. Es un elemento muy activo en el programa de prevencion, vigilancia y atencion, en la educacion y rehabilitacion de los niños que por cualquier concepto sufren de alguna limitacion.

La enfermera asiste a la familia ofreciendole consejos medicos referente a la alimentacion correcta de los niños propagando la importancia del valor de la alimentacion natural. Interpreta las ordenes del medico concernientes a la familia en lo referente a regimen diario del niño y procura crear en los padres lo mas tempranamente posible los habitos sanitarios correspondientes.

El Servicio dė Enfermeras Sanitarias, es tambien de gran importancia en los programas medicos relacionadas con las industrias muy principalmente con los programas educacionales en relacion con la tuberculosis, las enfermedades venereas y el cancer. La enfermera sanitaria trabaja solamente bajo la direccion del medico, representando el mas perfecto eslabon entre el medico y la familia, suplementando el servicio medico, desarrollando al maximum la atencion medica del paciente y facilitando la resolucion de los mas variados problemas tendientes a asegurar en todo caso la mas satisfactoria relacion entre el paciente y el medico.

44 Marshall St.

A HOSPITAL ROOMING-IN UNIT FOR FOUR NEWBORN INFANTS AND THEIR MOTHERS

Descriptive Account of Background, Development, and Procedures with a Few Preliminary Observations

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INTRODUCTION

ROOMING-IN is the term currently in use to designate the hospital arrangement whereby a mother may have her newborn baby in a crib by her bedside whenever she wishes. The term was first used by Gesell and Ilg.[1] Such an arrangement was established for study purposes on the University Service of the Grace-New Haven Community Hospital in October 1946. The four-bed ward used for this purpose is known as the Rooming-In Unit. An account of development of this Unit with a few preliminary observations is the subject of this paper.

Because of the enthusiastic participation of fathers in the project from the day of its inception, the authors were inclined to entitle the paper, "Rooming-In for Parents and Newborns." The husband may be with his wife throughout the first stage of labor if mutually agreeable; under normal circumstances he may see his baby shortly after birth—even hold him; he may continue to get closely acquainted with his child day after day in the hospital, and watch his wife and the baby at nursing time if that happens to occur during visiting hours. This paternal participation has afforded obvious satisfaction to both parents which we believe is salutary for the baby. Indeed, the first major assumption in making plans for the Rooming-In Unit has been that a mother's satisfaction with herself and with the attention and care bestowed upon her (by husband, parents, members of medical and nursing staff) is the best guarantee for her inclination and ability to satisfy and comfort her baby;* the second major assumption has been that the infant's contentment not only bolsters the mother's self-confidence, but is the first requisite for his unimpeded growth and development (which includes his emotional development), for his uninhibited capacity to learn, and for his gradual acceptance of the disciplines and demands imposed by family and community life.

There are two main incentives for the revival of the rooming-in idea, representing respectively infantile and maternal needs. The first is the combined pediatric and psychiatric interest and inquiry concerning causative factors and possible preventive measures for the troublesome behavior disorders and neurotic manifestations of childhood. This

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* Compare statement of Middlemore:[2] "The experience of the mother as she tries to feed a fussy or inert baby will be as important an influence on him, albeit an indirect one, as anything he feels himself, for she cannot give him the breast comfortably unless she is herself at ease."

inquiry has led in recent years to a critical re-evaluation of the procedures for infant care recommended during the past quarter century. Observations and study of disturbed children and parents have pointed to the hospital nursery regime for newborns as one probable source of difficulty, with two chief trouble areas: (1) the separation of mother and infant after delivery, a frustrating experience for those mothers who want to love and enjoy their babies; (2) the imposition of a rigid schedule for both as a pattern of procedure from the time of the baby's birth throughout infancy with too little regard for newborn needs and gradual developmental changes, for individual variations or for the particular stresses of the mother in her adjustment to the care of the newborn child.[3, 8-19]

The other main incentive for the present interest in rooming-in comes from the joint psychologic and maternal protest against the harsh denial of parental privileges which the usual present day maternity ward procedures and hospital nursery care of newborns entail. It is probable that the mothers who have dared in recent years to protest are those who have found in the theory of dynamic psychology and in child-developmental data, support for their ardent wish for full enjoyment and mastery of the experience and responsibilities of motherhood.*

At the New Haven Hospital, for instance, the first mother to make a definite ante-natal request for permission to keep her baby in the same room with her after birth was convinced by her instinctive feelings, by her education in child analysis and by former experience with two babies born in Europe that rooming-together was the only right way for her. She wanted very much to nurse her baby on a flexible, ad lib schedule. The request, made in the summer of 1938, was supported by her husband, by her chosen pediatric adviser (both of whom were child analysts), and by her obstetrician; but it was denied as being contrary to the then accepted hospital procedure. As it happened, the mother's wish was unexpectedly gratified. At the time of the baby's birth she was admitted to an isolation ward because she had mumps and under the demands of isolation technics it became advantageous for mother and newborn baby to be cared for in the same room.

Any direct and immediate follow-up of this first actual application of a rooming-in concept was impossible at that time for many different reasons. But there had already been started an indirect approach which led through pediatric channels to a somewhat sharper focus on the potential advantages of a close association for mothers and newborns. In 1937, under the authorization of Dr. Grover F. Powers, a three-month survey was undertaken of the problems for which mothers of newborns asked for help during the month after their discharge from the hospital. The evidence from even this brief survey indicated that the hospital care of mother and infant did not prepare the mother to understand her baby or to undertake its care with confidence. Mothers, especially of first-borns, were often afraid to handle the baby and often unnecessarily anxious about his normal reactions. They were not prepared for day-to-day changes, and often fell into difficulty trying to maintain the rigid schedule recommended by the "baby-doctor" at the hospital. The difficulty grew out of the disturbing conflict between their loyalty to the

* It is noteworthy in this connection that Mrs. Frances P. Simsarian and Mrs. Roberta White, authors of an article entitled "Two Mothers Revolt"[4] in which they describe the pleasures and advantages of having the newborn baby beside them are listed in the Contributors' Column as a psychiatric social worker and a former teacher of psychology, respectively.

respected medical authority and their own observations and feelings. But perhaps the most important consideration highlighted by the survey was the fact that the pediatric interne rotating through the nursery was writing the discharge schedules and formulae for the babies with relatively little awareness of the variety of infantile and maternal reactions to the feeding situation and their possible importance for the future development of the baby. Having no clinical experience of family emotional problems with a new baby in the home, he seldom had an opportunity to see the result of his recommendations and was consequently seldom in the position of having to be seriously concerned with earliest everyday problems of mothers.

In order to offer clinic-status mothers a much needed pediatric supervision and at the same time to provide the pediatric internes with experience of newborn problems in the home, Dr. Powers instituted the home-visiting plan in the autumn of 1938.[5] According to this plan the pediatric interne working in the Nursery continued his supervision of the clinic-status newborn babies until they were six weeks of age and eligible for Well Baby Conference supervision.*

This home service taught the interne in a convincing way the variety of home, family and personality situations which the newborns entered on discharge from the hospital. It taught him not to expect a smooth accommodation of all the babies (and mothers) to a similar set schedule. He could accept the reasonableness of a flexible schedule in early infancy. Each interne had the opportunity to learn from his own experience the value of knowing the mothers and something about their home and family background for the understanding and management of the neonatal period both in the hospital and at home. He learned to temper the discharge orders with verbal encouragement to the mothers for changes according to individual situations.

The response of the mothers to such increased attention to their problems is important for our present considerations. They had, it seemed, been long afraid to bother the busy, scientific doctors with everyday matters of baby care. They had, accordingly, sought answers elsewhere for the little but challenging questions which kept coming up. However, once the doctors gave heed and valuable time, the suppressed eagerness of the mothers both to ask questions and to help in finding the right answers became manifest and merited further serious attention from the interne. For instance, a mother who was disappointed over the fact that the interne would be unable for technical reasons to make home visits to her and her baby asked why she could not in that case have the baby in the room with her to learn how to take care of him before she went home. Since senior members of the pediatric staff had been advocating a rooming-in plan, the interne had reason to be impressed by the mother's suggestion; and was glad to tell her that such an arrangement was under consideration. The mere mention of this incident in a professional article brought letters from two prospective mothers in distant cities asking for help and instruction in working out a rooming-in arrangement. This response lent further evidence to our point: that many parents, subservient to the supposed dictates of modern medicine, have suppressed their feelings about themselves and their children as unworthy of scientific consideration, but have reached out eagerly for help wherever the slightest evidence of professional justification for their feelings has presented itself.

One of these two mothers seeking advice about a rooming-in arrangement wrote from Topeka, Kan., in December 1944. She and her husband, a psychiatrist, wanted a rooming-in arrangement to ensure an ad lib breastfeeding plan for their second child from the beginning, because they both

* Under auspices of City Health Department and Visiting Nurse Association of New Haven.

felt that much of the difficulty with the first baby (then two years old) was referable to the baby's hospital experience with much screaming from hunger during the four-hour intervals. We replied with suggestions based on observations of the first rooming-in "experiments" on the maternity ward of our hospital in September and October 1944.* The rooming-in plan was permitted them by the hospital authorities as an exceptional procedure (the husband was a member of the hospital staff) and, as the mother subsequently wrote, it worked out advantageously (February 1945).

The other mother writing from the environs of Boston made an even more ardent plea for help in effecting a rooming-in plan for her expected fourth child. With her first three children she "had resented keenly having my babies whisked away after nursing which resulted in my being depressed and restless and fuming to get out of the darn place and home as quickly as possible." In the ten-year interval between the birth of her third child and the present pregnancy she "did nursery school work and read, so that the knowledge of the needs of a baby are now added to my feelings." In this case, the mother's eager wish was not granted by the hospital authorities, but she has the satisfaction of knowing that her plea played a role in making it possible for other mothers elsewhere to have what she wanted for herself.

It was becoming more and more apparent that the pediatric, psychiatric and maternal considerations merged in the recognition of the potential value of a rooming-in arrangement for both mother and infant. It would certainly offer encouragement to mothers who wanted to nurse their babies by permitting a flexible ad lib feeding plan. Obstetric colleagues and nursing staff gave their cooperative interest to the first attempts of putting theory into practice as described in the following paragraphs.

The first rooming-in ventures on the maternity ward of our hospital took place in the fall of 1944, first with a primipara, then successively with two multiparae. The two latter, from underprivileged background and mothers of several children, greatly enjoyed the arrangement and each felt entirely comfortable and competent with a baby beside her, regardless of what anyone said. The primipara, on the other hand, although prepared for rooming-in prenatally and looking forward to it as a potential help in nursing her baby, was obviously sensitive to the apparent skepticism of some staff members to this first experiment of its kind on the ward. She developed a series of difficulties, had to give up nursing the baby and was unhappy.

These first attempts emphasized two factors for future consideration: (1) There were obvious difficulties for the student nurses in caring for mother and baby as a single assignment on a ward where the routines necessitated separate nursing care for mother and infant, and also in carrying out procedures necessitated by the ad lib schedule directly opposed to their instructions. Rooming-in could, therefore, be accepted on the ward only as an experimental procedure. (2) Mothers could not be spared the disadvantages of the uncertainties of the "experiment," of obvious skepticism on the part of some attendants and of expressions of differing opinion on the part of advisors. Any mothers, therefore, who wanted to subject themselves at that time to a rooming-in "experiment" needed preparation for these difficulties in advance.

Whereas the idea of rooming-in had been suggested to these first three mothers,† the next three requested a rooming-in arrangement. Two were wives of members of the pediatric staff and the third was a psychiatric social worker in the Department of Pedi-

* The first of these was reported at a meeting of the Committee on Infancy and Early Childhood of the American Society for Research in Psychosomatic Problems, October 1944, during the panel discussion of attitudes of mothers toward pregnancy and newborn babies.

† In the first case by Miss Augusta S. Clay, student in the Yale University School of Education, doing field work in maternal and infant guidance in preparation for a doctorate of philosophy thesis; in the other two cases by Dr. Herbert C. Miller, then pediatrician in charge of the Nursery.

atrics. Each was pregnant for the first time. They and their husbands were aware of the skepticism they would encounter, but none-the-less pressed for what they considered the advantages of rooming-in. In June, July and October, 1945, the three mothers in succession tried rooming-in on the maternity division of the private pavilion. In each case both the mother and the father very much enjoyed the closeness with the baby and they have remained strong advocates of the potential advantages of a rooming-together arrangement. However, the mothers felt uneasy or guilty in having to call a nurse for help every time it was needed, since the nurses on a busy service obviously found it difficult to answer unexpected demands at irregular times; but if the desired help was not promptly forthcoming, the mothers were uncomfortable.

This second series of "experiments" served chiefly to document the manifest interest of pediatric staff members in rooming-in and to emphasize its incompatibility under a single room arrangement with the regular hospital maternity service in the absence of additional nurses.

Dr. H.T., at the time Associate Professor in the Department of Obstetrics, sympathetic to the ideals of rooming-in, invited interdepartmental discussion of the subject in April 1946. At this time K.H., present in her newly accepted position as nursing supervisor in obstetrics, expressed active interest in trying to devise a workable plan for the nursing care of rooming-together mothers and babies. During April and May 1946, a series of four more "experiments" was undertaken. A student nurse was assigned to "special" each mother-baby unit. They kept time records of their nursing activities. As could be foreseen, the time required by the four different mothers varied considerably according to their personality needs. But even the average time expended in nursing care was not significantly in excess of that recommended for the combined nursing care of mother and baby according to the nursing care standards set up by the National Council of Nurses.

That, however, was not the crucial point; it was, rather, the fact that nursing coverage around the clock appeared essential for rooming-in mothers and babies on an ad lib schedule, especially for the first few days. This precluded, from the nursing administrative point of view, any possibility of offering adequate nursing care to the mother-infant combine in single rooms on the maternity service. K.H. recommended a four-bed rooming-in ward or unit as the practical solution.

The following essential facts permitted the adoption of a plan based on this recommendation in July, 1946, and the opening of the Rooming-In Unit for patients the end of October 1946:

1. Representatives from the services directly involved with the hospital care of mothers and newborn infants were cordially in accord with the development of a rooming-in project.

2. A little-used solarium on the maternity ward was assigned by the Department of Obstetrics for use as a Rooming-In Unit. This made it possible to increase rather than decrease the number of available maternity beds. Reconstruction of the solarium under the supervision of Dr. A.F., begun the end of September 1946, was completed in a month.

3. Through the generosity of the Mead Johnson Company, Dr. Powers could offer fellowships for a pediatrician and for a nurse to assist in a rooming-in study.

4. A nuclear group of one representative each from the Departments of Pediatrics and Obstetrics, from the Hospital Administration and from the Obstetric Nursing Service formed themselves into a policy-making committee for the development of both project and study plans.

The foregoing introductory discussion has been intentionally detailed to emphasize the slow, complicated development of a rooming-in project in a teaching hospital. Two other pioneer efforts in different parts of the country, based on like considerations, have been similarly gradual in maturation. We refer specifically to the accomplishments of the Cornelian Corner in Detroit[3] and to the plans of Dr. P. A. McLendon and Dr. J. Parks in the new George Washington University Hospital in Washington, D.C.[6] Irrespective of possible delays imposed by war and post-war conditions, and for all its apparent simplicity, rooming-in is an intricate and multi-faceted undertaking. The rigid hospital practices issuing from the medical and nursing instruction of the last generation can not be reversed suddenly without risk of some sort of disruption. Any plans, therefore, must be sufficiently deliberate to ensure strong coordination and agreement of aim of the overlapping professional groups responsible for the care of mother and newborn child.*

Nursing Administration

The Rooming-In Policy Committee agreed that a unit with 24-hour nursing coverage separate from the existing maternity division was essential to carrying out a satisfactory study of all aspects of the subject. The desire to provide nursing coverage at all times for the Rooming-In Unit was based on the following considerations:

1) The constant presence of a nurse was felt to be of great importance to the peace of mind of the mothers.

2) The entire project was in the nature of a study requiring close and constant observations on all activities within the Unit.

3) The Unit was physically separated from the rest of the maternity division by doors and was on a separate signal system.

The continual nursing coverage was provided largely by student nurses under the direct supervision of the graduate nurse who was in charge of the Unit on a fellowship basis. The cooperation of the Yale School of Nursing made this plan possible.

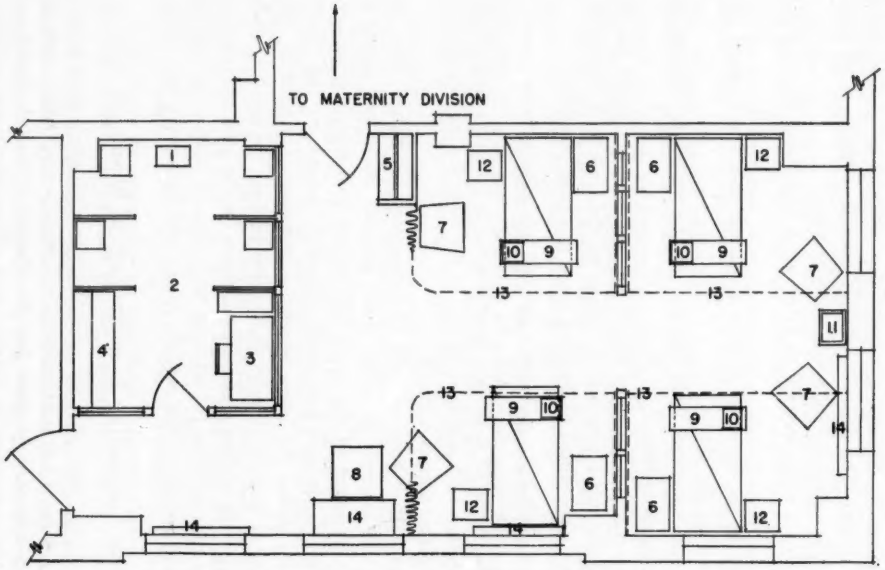
Description of the Rooming-in Unit and Equipment

The solarium, a rectangular room 20′ x 38′ was reconstructed to provide a four-cubicle rooming-in ward with a partitioned-off section at the end of the room for use as a doctors' and nurses' office and contiguous nursery cubicles.

The ceiling and the upper half of the two walls of the nursery and nurses' office are covered with sound absorbent material to soften usual hospital noise and sound of babies' crying. The acoustic treatment of the upper half of the two complete walls of the nursery and nurses' office is deemed particularly advisable because of the cubicle construction of the two sides within the room which for purposes of ventilation stop three feet short of the ceiling as does the cubicle construction between the mothers' beds. The upper half of all cubicle walls is clear glass; draw curtains for the glass are provided for privacy as desired. It is thus possible for adjacent and vis-a-vis mothers to see and converse with each other, and for any of the mothers to see into the nursery and nurses' office if they wish.

One of the most important considerations in constructing the Rooming-In Unit was

* Barnett[7] has reported a rooming-in experience of two years' duration in the twelve-bed maternity ward of the hospital at the atomic bomb project at Los Alamos, New Mexico. Without discussing the reasons for this undertaking he states that "the reactions of both the parents and the professional personnel to the arrangement as described were almost unanimously favorable."



KEY

1 ZEPHARIN DISPENSER
2 NURSERY
3 NURSE'S DESK
4 DOCTOR'S EXAMINING COUNTER
5 COAT CLOSET
6 BASSINETS
7 CHAIRS
8 TABLE
9 OVER-BED TABLES
10 BREAD BOXES
11 SINK
12 BEDSIDE TABLES
13 CURTAIN TRACKS
14 RADIATOR

FIG. 1

that of making it as attractive and home-like as possible, in conformity with the ideal of comfort and ease in the treatment plan. The walls were painted pale rose color; the trim ivory. Chintz curtains were provided for all windows; monk's cloth curtains for use around the beds.

The equipment provided for the Unit is the usual hospital type of bed, over-bed table, bedside stand and chair. Since the cost of installing a sink in the nursery was considered prohibitive, an alcohol dispenser for use with aqueous zephiran was substituted. The bassinets for the babies are of the usual type used in large nurseries, there being nothing on the market which offered advantages warranting purchase (several different types were tried out). A bread box with a drop-door in front is placed on each over-bed table to provide the mother with a protected storage place for supplies for the baby. In addition there are two rocking chairs and a table for the use of ambulatory mothers.

General Procedures for Rooming-in Project and Study

I. Selection of mothers and preparatory interviews in Prenatal Clinic

In October 1946, two of us (E.B.J. and R.W.O.) started regular attendance at the Prenatal Clinic to select the mothers for the Rooming-In Unit. Since rooming-in could be offered to only four mothers at any one time, certain criteria of selection were necessarily established. Random choice was eliminated as a basis of selection, since it was considered psychologically unsound to impose a rooming-in arrangement on any mother unsympathetic to the idea. The following criteria were selected as the most applicable for the beginning of the project; they were aimed to include the mothers who would most profit from the arrangement, and to exclude those who would gain the least:

1) The mother's wish to breastfeed her baby.
2) The absence of gross emotional or social problems (obvious at time of interview).
3) At least average intelligence of the mother (impression at time of interview).
4) The mother's positive interest in rooming-in (including father's assent).

Parity has, to date, not been a criterion for selection. Actually the admixture of primiparous and multiparous mothers has, we believe, been an asset to the pleasant atmosphere of the Unit.

Changes in criteria will undoubtedly be indicated from time to time for study purposes. Even in the beginning, it has been difficult to adhere strictly to all four criteria. For instance, five mothers who knew during pregnancy that it was inadvisable for them to try to nurse were accepted as candidates, because they so strongly wanted rooming-in. The admixture of nursing and non-nursing mothers presents certain problems within the Unit, but the non-nursing mother apparently derives equal satisfaction from the facilities of rooming-in. We have also accepted several mothers with severe emotional difficulties which were not apparent in the first or second interviews. We felt in each case that the mother could be helped through rooming-in and that her exclusion would intensify the difficulty. We have, however, adhered strictly to the fourth criterion and never admitted a mother who did not want to have her baby with her.

The general plan has been to interview the mothers for the first time during the seventh or eighth month of pregnancy. (As the work has progressed we have tried to see the mothers earlier.) We introduced ourselves as the doctors who would later take care of their babies in the hospital. At the preliminary or screening interview, data were obtained in reference to the first three criteria only. No mention of rooming-in was ever

made to the mother who did not want to nurse her baby, who was obviously disturbed or below par mentally. The intelligent, apparently well-adjusted mother who was eager to breastfeed her baby was interviewed again during a prenatal visit. At this second interview the pediatrician first encouraged the mother's questions and then himself asked questions about the preparations she was making for the baby (Mothers' Classes, equipment, care of the breast, help in the home after the baby's birth, etc.) and her reasons for wanting to breastfeed. Only then was she asked, if she were given the choice between having her baby in the usual nursery arrangement or in a crib by her bedside, which she would prefer. Rooming-in was thus simply suggested as a theoretic alternative to the usual nursery arrangement with no attempt whatsover to influence the mother's response. If the mother expressed enthusiasm for the idea, she was told about the existence of the Rooming-In Unit. She was asked to talk over her interest with her husband and report to us again at her next prenatal visit. If at this time both she and her husband were enthusiastic, she was registered as a Rooming-In Candidate and was seen at subsequent visits in Prenatal Clinic. This may have been once or twice or several times, according to the length of time before delivery or the available time of the pediatrician. At each interview the pediatrician expressed his interest in the mother's well-being, in her interim questions and problems and he invited her spontaneous comments. He asked certain further questions about subjects already discussed, and also about her reading knowledge of maternal and infant care and about her hearsay knowledge of pregnancy and labor. He encouraged a discussion of her own reactions to pregnancy and about her anticipation of labor and child-birth, hoping both to gain information about the mother's concerns and to relieve her anxieties based on misapprehensions or unanswered questions. The mothers realized the dual purpose of the questions: to help them to a fuller preparation for the care and enjoyment of the child, and to gather data for study which might prove useful to other parents. In general they expressed appreciation for the interviews, thanking the doctor for his time. The more educated mothers added to their appreciation a voluntary statement of willingness to participate in any study that might be undertaken. The interviews were, of course, utilized by the pediatrician to orient the mothers to the Rooming-In Unit and its procedures and thereby to discuss various aspects of baby care with the mothers prenatally. It is hoped that time and personnel may sometime permit similar orienting interviews with the fathers before the baby is born.

Six weeks after the Rooming-In Unit was opened, a descriptive article about it appeared in a local newspaper. Prior to this publicity, the existence of the Unit was essentially unknown. During this period we were able to observe a succession of completely spontaneous responses to the suggestion of rooming-in. A majority of these mothers were smilingly enthusiastic, commenting variously, "If that were only possible!" "Gosh, I'd love that!" "Of course, after waiting so long, I would want to keep my baby with me!" The reasons given by those who preferred the usual hospital arrangement were most often that they would get less rest in the Rooming-In Unit, but also that it would not be so healthy for the babies, that the babies would be spoiled if given so much attention by the mothers, or that the mothers could not accept the limitation of visitors. In a few cases the mothers, themselves, preferred a rooming-in arrangement, but the husbands objected to it on the basis that their wives would not get enough rest.

As the existence of the Rooming-In Unit has become more generally known in the community (through the newspaper account, through recommendations of the Visiting Nurse Association in Mothers' Classes, and by direct referral of mothers who have

enjoyed the Unit), an increasing number of mothers have spontaneously requested admission. Therefore, the details of procedures during preliminary interviews have had to vary somewhat to conform with the gradual changes in the situation. In addition to the mothers interviewed in the Prenatal Clinic, a few mothers under the care of private obstetricians have requested rooming-in. They have been interviewed and accepted on the same basis as mothers in the Prenatal Clinic.

During the first nine months of work (from October 1, 1946, to July 1, 1947) 434 mothers were interviewed. Their responses may be roughly classified as follows:

Rejected on basis of criteria 1, 2 and 3 199
(approximately two-thirds of these rejections were because the mothers did not want to breastfeed)
Offered possibility of Rooming-In Arrangement 235
Wanted Rooming-In 175*
Did not want Rooming-In 60

II. Procedures in the Unit

1. Admission of mothers to the Unit.

When a prospective rooming-in mother is admitted to the hospital in labor, the pediatrician and nurse on call for the Unit are notified and plans are made for her admission after delivery. There have been certain practical difficulties associated with the availability of only four beds. In order to justify constant nursing coverage of the Unit, we have attempted to keep the beds filled. Thus occasions have arisen when a mother, previously selected as a rooming-in candidate, delivers at a time when the Unit is filled and she must accordingly wait until a bed becomes available before she can be transferred to the Unit. On other occasions we have moved mothers who were not previously selected from the ward to the Unit in order to keep the Unit filled when no rooming-in mother was in labor. During the first eight months of operation, however, there have been only seven previously selected mothers who were unable to come into the Unit because of lack of space.†

In the eight months from November 1, 1946, to July 1, 1947, there have been a total of 116 mothers in the Unit. 99 were admitted through Prenatal Clinic and 17 were under private obstetrical care. They were almost equally divided between primipara and multipara.

If a bed is available following delivery, mother and baby together are taken directly to the Unit. The father may accompany them and is allowed to remain for a short visit. After the father has left, the mother may keep the baby by her bedside, or if she prefers and particularly if the delivery has occurred at night, the baby may be taken to the Unit nursery. In this case he is returned to the mother's bedside whenever she requests or at the time of the first nursing.

As soon after birth as possible the baby is examined by the pediatrician who then discusses the examination and the baby's condition with the mother. At this time, too,

* Of these, 7 were unable to have rooming-in for lack of available space at time of delivery, and 52 were scheduled for delivery after July 1, 1947.

† The necessity to exclude selected mothers from rooming-in for lack of space must be emphasized as a potential serious psychologic problem because of the intense reaction of disappointment some mothers experience. It was therefore gratifying that during the first eight months of the Unit's operation the demand for rooming-in was not much in excess of the available space. The definite increase in demand at the time of writing is presenting new problems in procedure.

he helps to acquaint the mother with certain procedures in the Unit, and helps her with certain aspects of the care of the newborn baby.

2. Amount of time baby is at bedside.

During the course of her hospital stay, the mother is allowed to have the baby by her bedside as much of the time as she desires. During the first four nights it is generally suggested that the baby be removed to the nursery to insure the mother a restful night. Some mothers, however, have preferred to keep their babies by the bedside during this time and they have been allowed to do so. The period from 12:30 to 2:00 P.M. each day, just before the arrival of visitors, is usually a quiet rest period for the mothers, and many of them have preferred to have the baby in the Unit nursery at this time. It is impressed on each mother that the baby may be moved to the nursery or left by the bedside as she wishes. By the fifth day the majority of the mothers keep the babies beside them all the time. Except in occasional cases, a baby in the nursery is taken out to the mother for nursing when hungry.

3. Mother's care of the baby.

Throughout the mother's eight-day hospitalization, an effort is made to give her the feeling that she need not assume any of the practical care of the baby, such as lifting him from the crib and diapering him. As she begins to feel energetic and expresses a desire to take care of the baby, she is allowed to do so. The nurse, in constant attendance, is ready at all times either to assume full care of the baby or to help and instruct, according to the mother's wish. During the first few days many mothers have had difficulty in lifting the babies from the bassinets onto their beds. The nurses make a special effort at these times to help them, to avoid any feeling of undue physical exertion on the mother's part.* The bread box on the mother's over-bed table, containing the baby's supplies and the materials for the care of the mother's nipples and the cleaning of her hands, has proved an easy and satisfactory arrangement, probably more so than a self-contained bassinet unit, because the mothers can easily pull the over-bed table to the desired position. The mothers have been dextrous and uncomplaining in the handling of their babies while in bed. As already indicated, the reaction of the mothers toward assuming practical care of their babies has varied, some beginning almost at once to take complete care, while others, more hesitant, prefer to have the nurses do most of the care while they observe and learn. However, by the fourth or fifth day in the Unit, most of the mothers feel quite self-sufficient and confident and are caring for the babies entirely by themselves. Almost without exception, the mothers have spontaneously expressed at the time of discharge their feeling of confidence and their appreciation for the Unit facilities in making this possible.

The actual amount of time spent by the mother in feeding, holding and otherwise caring for the baby varied somewhat according to the personality of the mother, her physical condition, the day post-partum and the condition of the baby. During an eight day time-study the activities of the mothers in the Rooming-In Unit were charted. The

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* The routine of the Obstetric Service has been maintained in the Unit, with very occasional exceptions for private patients. The mothers have remained in bed for 5 days, "dangled" their legs on the 6th day, walked around on the 7th day, and gone home on the 8th post-partum day. Most of the mothers have remarked on the difficulty of lifting the baby from his crib unless she were at least sitting up with her legs dangling over the edge of the bed. The mothers on an early ambulatory regime did not have this difficulty. Many mothers have expressed a desire to get up on the 4th or 5th day. A modified early ambulation procedure was begun August 1, 1947.

total time each mother spent in caring for her baby is tabulated below in hours. The indication of an increase in the amount of time each mother spent handling her baby on the fourth and fifth days is in agreement with the clinical observation, mentioned in the next paragraph, of the increase in the number of feedings demanded by the babies on those days. Mother H.E. commented, "The time charted does not include all the hours we spend just looking at the babies."

TABULATION OF AMOUNT OF TIME IN HOURS SPENT BY 7 MOTHERS IN CARING FOR THEIR BABIES DURING AN 8-DAY TIME STUDY

	Post-Partum Day								
Mothers	Delivery	1	2	3	4	5	6	7	Discharge
1. WA								4.4	0.6
2. MB				3.8	6.1	6.3	3.8	4.5	2.3
3. CC				4.8	6.	1.8*	4.9	5.5	1.1
4. MD	4.4	4.8	4.2	4.0	6.2	5.1	6.4	4.2	
5. HE	.5	3.7	6.3	6.2	6.1	6.6			
6. CF	2.0	5.6	3.8						
7. SG	2.3	4.5	4.8						

* Mother C.C. was ill with diarrhea on her 5th post-partum day and was accordingly disinclined to take care of the baby.

4. Self-demand schedule for both mothers and infants.

The mothers have been encouraged to nurse their babies when they are awake and apparently hungry. Formulae are not routinely written but are ordered for any baby whose behavior indicates lack of satisfaction at the breast. Plain sterile water is available for the mothers to offer the babies who do not drop off to sleep easily after nursing. We shall not report here on the number and frequency of nursing periods under this regime other than to say that a definite peak in the number of nursing periods usually occurs on the fourth and fifth days, falling off again on the sixth and seventh days. Some mothers have become obviously fatigued during these peak days, and in these cases we have attempted to ease the mother's burden by providing occasional supplementary or complementary formulae, and by having the nurse feed the baby in the nursery so that the mother may rest or sleep. As far as possible the babies are weighed and their temperatures taken when they are awake to avoid waking them unnecessarily. Similarly, panning, bathing, etc., are provided for the mothers according to their need or readiness. The mothers have reacted favorably to this lack of absolute routine in hospital care, particularly the multiparous mothers, who have generally remembered unpleasantly the hospital interruption of sleep and rest during previous confinements.

5. Visiting in the Unit.

Because of the baby's presence by the mother's bedside, the number of visitors each mother may have has been limited to two other than her husband during the course of her hospital stay. There is an afternoon and an evening visiting hour; only one of the three visitors is allowed at any one time. (Occasional exceptions are made for out-of-town visitors.) This arrangement has diminished considerably the usual confusion at the time of hospital visiting hours and has, in general, met with the approval of the mothers. Obviously, visitors who have colds or any form of infection are excluded. Visitors

may hold the baby (if awake); the father, in particular, is encouraged to do so. Before holding the baby, however, the visitor is required to wash his hands thoroughly and put on a gown. We have also encouraged the father's presence when the mother is nursing the baby. Almost all the fathers have shown a great interest in their babies. Many a one, who on the first day hesitated to hold the baby "for fear it would break," found it "a real thrill" subsequently, and confidently marched right in to the Unit, put on a gown, and expectantly waited for the baby to awake. Many of the fathers, too, have been interested in helping their wives get the baby in position for nursing, in giving the baby water or changing his diapers. This has proved a significant, practical help for the mothers in the first period of adjustment at home. Our observations have not indicated any disadvantages for the babies in allowing visitors to hold them. Specifically, no baby has had to be isolated for diarrhoea or skin infection.

6. Mothers' notes and Behavior Day Charts.

During the first three months of the project, the mothers were asked to keep notes about the babies' behavior and their own reactions. Sometimes these turned out to be merely notations of the clock time and the length of time spent in feeding and changing the baby. The notes, none-the-less, served the purpose of focusing the mother's attention on the details of the baby's reactions and day by day changes, and of reminding her of questions to ask doctor or nurse. Sometimes the notes described the baby's looks and actions and the mother's feelings in considerable detail. Almost every mother in the early weeks wrote notes about her pleasure in rooming-in. They often added constructive suggestions for improvement, some of which we were able to follow out. Hospital regulations for visitors have not permitted fulfillment of the unanimous wish of the multiparous mothers to see their other children and to have the children see them and the new baby; nor have the mothers been able to talk directly with the children by telephone until they are up and ambulatory.

In February, the use of Behavior Day Charts recommended by Dr. Arnold Gesell and Dr. Frances Ilg[1] was introduced to the mothers in the Unit. In general the mothers have been enthusiastic about filling in the chart and have wanted to continue it at home as illustration of the baby's progress. No pressure has been exerted on the few mothers who were disinclined or unable to keep a chart.

7. Nursing care.

The unified care of mother and baby has been a new and valued experience for all nurses working in the Unit. Each group of student nurses rotating through Rooming-In have volunteered statements of appreciation for the educational merits of the service and the opportunity "to do real nursing." The sincerity of this appreciation has been documented several times by requests from young married nurses who have had experience in the Unit to be registered as candidates for admission as soon as they have become pregnant.

A time-study on the activities of both the nurses and the mothers in the Rooming-In Unit was carried out by staff and committee members for an eight-day period after the Unit had been in operation for six months. The total results of this study without any exact breakdown are reported here as a general indication of the distribution of the nurses' time and of the amount of time mothers spend holding, feeding and changing their babies in the Unit.

The Time Study was conducted for 8 days or a total of 192 hours less one hour due to the start of daylight saving time on the second day. Thus a total of 191 hours of nursing care was available of which 162.858 hours were accounted for as used. 2.742 hours more were recorded as additional

time given by another nurse and 31.242 hours were unused or unaccounted for. It is estimated that of the approximate 4 hours per day unused or unaccounted for about one-half was unused and one-half missed by the timekeeper (for instance, nurse away at mealtime).

The total nursing time given to the patients in the Unit during the 8 days of the study was 162.858 less .358 recorded by error or 162.5 hours. The total patient hours (for mother and baby) for the eight-day period was 1442.00 or 60.082 patient days; this takes into account the time which beds and bassinets were not occupied. Thus 2.7 hours per patient per day or 5.4 per mother-baby unit per day were given in nursing time. On the assumption that one-half of the time recorded as

Total Hours	Nursing Care in Hours					Unused or Uncharted Nursing Time	Overtime 2 Nurses on Duty
	Mother	Baby	Ward	Parent Education	Charting		
162.858	53.083	51.65	12.825	1.95	43.35	31.242	2.742

Care of Babies by Mothers			
Total	Cleaning	Feeding	Holding
149.866	10.083	82.758	57.025

unused or unaccounted for was used but missed by the timekeeper, another 15.621 hours should be added to bring the total nursing time of the Unit up to 178.121 hours which, in 60.083 patient days, provides 2.96 hours per patient per day or 5.92 hours per mother-baby unit per day.

General Observations and Testimonials

The most frequent questions which skeptical colleagues have asked both before and after the Unit was opened are the following:

Won't it tire a mother to have her baby with her all the time?

Won't the mothers be tired out having to listen to the crying of three other babies in addition to her own?

Wouldn't many mothers rather be alone in a room with a baby?

The multiparous mothers have generally stated that they preferred the rooming-in arrangement to the nursery regime and would certainly want it again in the event of another baby. They all wished they had had it with their first babies, and some were therefore inclined to feel that the limited bed space should be used principally for primiparous mothers. None of them felt that they got less rest in the Rooming-In Unit than during their previous confinements. Most of them stated positively that they actually felt more rested and peaceful under the rooming-in plan. One mother verbalized her comparative feelings thus: "It was like getting into a quiet country by-way after the glaring lights of Broadway!"

During the first three months we asked every mother how she reacted to the crying of her own baby and to that of the others. The answers were so uniform that we stopped asking as a regular procedure; but spontaneous comments in the same vein have continued to come. The multiparous mothers all referred to their previous worry in not knowing what was happening to the baby. Every time they heard crying from the

nursery, each mother thought it might be her child and feared that nothing was being done about it. In the Rooming-In Unit, on the contrary, they found peace of mind in knowing what the baby was doing all the time. For both the multiparous and the primiparous mothers, crying is essentially a signal to them of the baby's normal response, which they are glad to hear. They do not pay attention to the crying of other babies (except on the few occasions when a baby's crying has been excessive) because they know the babies will get immediate attention. The acoustic-celotex serves its purpose of reducing the sharpness of the crying sound. However, it may be emphasized that because of the immediate attention given to crying babies, there is relatively little crying compared with that heard in a nursery. Visitors to the Unit have usually been surprised at the quietude.

According to our observations, the majority of mothers have definitely liked the four-bed arrangement. They have appreciated the opportunity of observing other mothers and babies, exchanging with each other the various comments of doctors and nurses, and in general talking among themselves about their mutual problems. Both the experienced and the inexperienced mothers have found it a valuable and enjoyable educational opportunity. Obviously the grouping which depends entirely on the hour and day of delivery has varied in the degree of congeniality. Only a very occasional mother, however, has shown inclination to keep to herself, apart from the general interest of the Unit. On a few occasions single rooms have been used for a mother and baby together, sometimes for the first two days postpartum and sometimes for the last two days of hospitalization. The mother's response to a single room arrangement is definitely more favorable to the later period.

A group of six university women from different parts of the country, who had been in the Rooming-In Unit at different times, were asked their opinion about the optimal arrangement for rooming-in. They definitely favored a four-bed unit with the possibility of partitioned or curtained privacy over a single private room or a double, semi-private room. These mothers had on their own initiative and on the basis of their own experience prepared a panel discussion about rooming-in to promote its educational values before a Child Study Group of graduate students' wives. This panel discussion was, indeed, the most gratifying spontaneous testimonial of our year's work. It was repeated for the benefit of our several departments. As a result, participation of one or more mothers has been invited for professional discussion on the subject of rooming-in in our community.

Summary and Conclusions

Our report is limited to a discussion of the development of a Rooming-In Project in a teaching hospital, with a description of procedures and a few general current observations chiefly about parental responses. The over-all data from an eight-day Time Study has also been included in relation to procedures. Various aspects of the infantile welfare in relation to rooming-in, which have here received scant consideration, will form the basis of subsequent reports, as time and continued observation allow conclusions to take shape. In the meantime, we can merely restate a belief that the contentment and education which rooming-in does provide for certain parents is one safeguard for the normalcy of the development of the children of those parents. We are not holding a brief for rooming-in as a panacea. On the contrary, we believe there are many parents for whom it is not applicable; nor can it serve to prevent difficulties in children of very unhappy or disturbed parents. But we do believe that for the children of natural, happy and

healthy parents, it can offer protection against some of the severe emotional difficulties of children which the routinized child care regimes of yesteryear have encouraged.

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Spanish Abstract

Observaciones preliminares sobre un Hospital con cuartos para cuatro reciennacidos y sus madres

El plan comprende la atencion de cuartos para cuatro niños con sus madres en un establecimiento semiprivado. Unidad establecida en 1946 en el Grace-New Haven Community Hospital.

Estas unidades de cuartos fueron establecidos por la cooperacion del Departamento de Pediatria y Obstetricia de la Escuela de Medicina de la Universidad de Yale, la Escuela de Enfermeras de Yale y la Administracion del Hospital. "Rooming in unit" es el termino adoptado para designar el arreglo hospitalario que permite a cada madre tener su reciennacido en una cuna al lado de su cama tal como ella lo desea siempre.

Las ventajas del cuidado de la madre, su comodidad desde el doble punto de vista de la madre y del niño. Las madres son seleccionadas para estas unidades en el Servicio de la Clinica de Prenatales.

Hay una enfermera que atiende a la unidad en lo que se refiere a los horarios para los cuiadados de la madre y el niño. La madre aprende a cuidar a su bebe antes de dejar el Hospital a los cinco dias. Solamente dos visitantes ademas del padre son permitidos. Al padre no solamente se le permite sino que se le estimula a cargar el hijo. El valor del Rooming in unit ha sido una gran experiencia educacional en los pediatras, estudiantes, enfermeras y padres.

789 Howard Ave.

CONCEALED DIVERTICULUM OF THE MALE URETHRA AS A CAUSE OF URINARY OBSTRUCTION

By ROBERT E. GROSS, M.D., AND ALEXANDER H. BILL, JR., M.D.
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IN INFANCY and childhood there are many causes for obstruction to the flow of urine through the urethra. These include preputial adhesions, meatal narrowing, urethral stricture, posterior urethral valves, and contracted bladder neck. It has been known also that congenital diverticula of the urethra can give rise to urinary obstruction. These have been studied by Watts[1] in 1906, by Lowsley and Gutierrez[2] in 1928, by Kretschmer[3] in 1936, and by Campbell[4] in 1937. Such diverticula have been detected heretofore by the presence of a swelling on the ventral surface of the penis, in the peno-scrotal angle, or in the perineum. It is the purpose of this paper to present three cases of concealed diverticula of the urethra in each of which there was urinary obstruction; in none of these was there any swelling on the external surface of the penis. In two of these children the cause of obstruction was not recognized during life; death ensued as a result of urinary tract infection and the urethral abnormalities were found at autopsy. In the third child the cause of obstruction was found by roentgenologic visualization of the urethra, and surgical relief of the obstruction was promptly instituted.

CASE REPORTS

Case 1

Children's Hospital #153,603. This 5-year-old boy was admitted to the Surgical Service on October 3, 1931, with a history of urinary dribbling, intermittent fever, and pyuria. The mother stated that until 1½ years of age, the child had had no urinary stream, the urine coming away only in a slow flow or dribble. Subsequent to that time he began to have a fairly forceful stream; but, soon after he began to urinate, the stream would shut off and he would be unable to start it again for several minutes. A diagnosis of posterior urethral obstruction was made, but surgical exploration of the bladder neck on October 4, 1931 showed no evidence of such obstruction. A hydro-ureter and an advanced pyelonephrosis were demonstrated on the left, for which a left nephrectomy was done on November 17, 1931. Urethral dilatations were done on two occasions. The child was discharged from the hospital January 8, 1932.

A few days after the above hospital discharge the boy returned with marked urinary infection and with difficulty in voiding. A re-exploration of the bladder neck again showed no definite obstruction in the posterior urethra. Believing that the failure to empty the bladder was possibly due to hypertrophy at the bladder outlet, several bits of tissue were removed from this area with a urethral punch. The patient died three days later of renal failure.

Autopsy examination showed the usual effects of long-standing urinary obstruction. There was pyonephrosis on the right (the remaining kidney), hypertrophy and dilatation of the right ureter, hypertrophy of the urinary bladder, chronic cystitis and dilatation of the posterior urethra. Two centimeters distal to the verumontanum, the urethra had a pouch-like depression, the mucosa of which was continuous with that of the urethra. This sac was about 4 mm. in diameter and extended downward and forward under the floor of the urethra. The diverticulum communicated with the urethra in such a way that the anterior edge of its orifice formed a flap which could balloon upward when the cavity was filled with urine. This upward movement of the flap would throw it against the superior surface of the urethra—and thereby obstruct the flow of urine into the anterior urethra.

From the Department of Surgery of the Harvard Medical School and the Surgical Service of the Children's Hospital.

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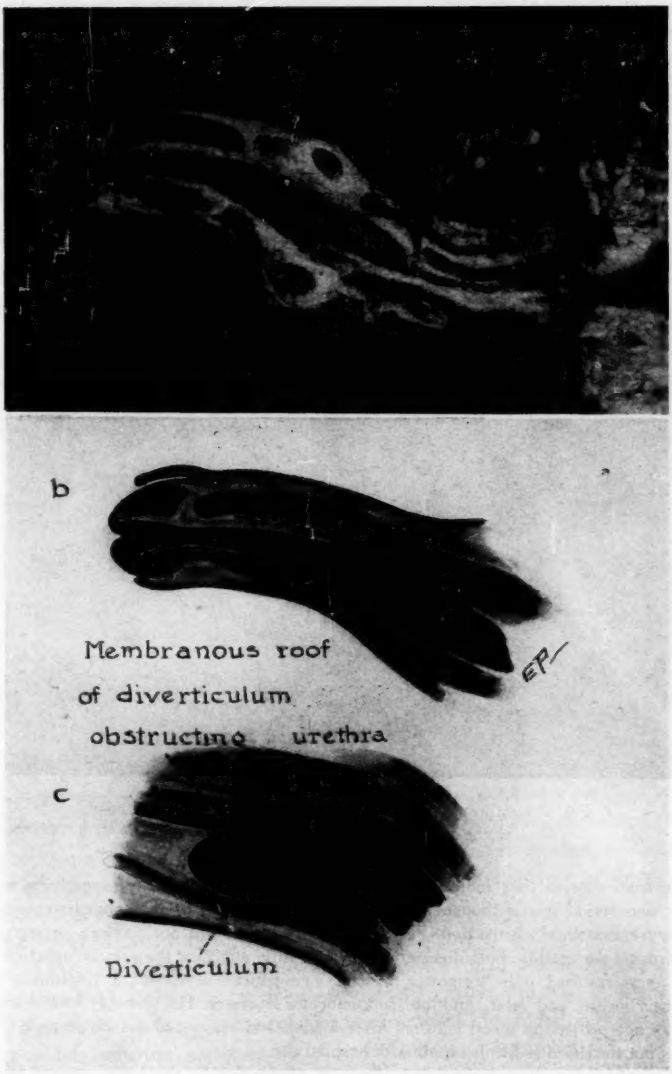

FIG. 1. Specimens from Case 2. a. Photograph of penis and bladder outlet which have been opened along their superior surfaces. In the floor of the mid-urethra can be seen the opening of the diverticulum. b. Reconstruction drawing of sagittal section through urethra showing the diverticulum below the urethra. c. Enlarged drawing of the diverticulum, indicating method of producing urethral obstruction. Urine fills the sac and balloons upward the thin roof of the diverticulum in such a way that it closes off the anterior urethra.

Case 2

Children's Hospital #246,244. This two-year-old boy was admitted to the Surgical Service on October 13, 1940, with a history of difficulty on urination, necessitating straining, since birth. There was a constant dribbling of urine due to an "overflow" bladder. He had had also a protuberant abdomen since birth (presumably from a distended bladder). For one month prior to admission he had been treated at another hospital for severe urinary infection, fever, and anemia. On admission there was a markedly distended bladder and a palpable left kidney. The patient was dull and apathetic. The genitalia appeared normal. B.P. 140/110 mmHg. N.P.N. 70 mgs./100 cc. The urine was loaded with white blood cells.

Urinary drainage was instituted with an inlying urethral catheter—which was inserted without difficulty. On the fourth hospital day exploration through the bladder was performed, but no obstruction of the posterior urethra or of the bladder neck was found. A suprapubic cystotomy was established. The suprapubic tube was kept in place intermittently following operation. Removal

FIG. 2. Urethrogram from Case 3, showing the valve-like roof at the anterior edge of the diverticulum.

of the tube from time to time indicated that the bladder would not empty properly by way of the urethra. At one period it was thought that spasm or hypertonicity of the sphincter-urethra muscles might be causing urethral obstruction, but a spinal anaesthesia did not produce an increased flow of urine through the urethra. Sulfadiazine therapy had little effect on the urinary infection. Various supportive measures had only temporary benefit. The patient developed a respiratory infection, bilateral otitis media, and later, multiple subcutaneous abscesses. He probably had a bacteriemia, but this was not proved by blood culture. After a long and serious illness he seemed to improve temporarily, but then died suddenly on his 87th hospital day.

Autopsy examination showed the usual effects of obstruction in the lower urinary tract. There were bilateral hydronephroses, bilateral hydroureters, extensive renal damage and infection, hypertrophy of the urinary bladder and a marked cystitis. In addition, there were multiple abscesses throughout the lungs, an interstitial pneumonia, bilateral otitis media, and multiple thromboses of cerebral veins and dural sinuses. Examination of the urethra showed the following important findings: At a point 3 cm. from the meatus and 5 cm. from the verumontanum was a small pit, the anterior edge of which formed a small valve-like structure (Fig. 1). Fluid poured from the proximal end of the penis toward the distal end, ballooned out this valve-like flap edge and forced it upward against the roof of the urethra (Fig. 1c) so that the anterior urethra would become obstructed. It should be noted that this child had been studied extensively during life, but that the lesion causing

his obstruction was not recognized until autopsy. It was felt in retrospect that a urethrogram might have helped in detecting the urethral pathology during life.

Case 3

Children's Hospital #304,638. This nine-months-old male was admitted to the Surgical Service on April 26, 1946, having been referred by Dr. H. Arthur Berson, Boston, who suspected a urethral obstruction. Since birth the patient had been noted to have difficulty in urination. He had to "strain" each time he voided. Grunting and straining produced only a poor urinary stream which never amounted to more than a slow dribble. During attempts at urination, physical exertion was so marked that the boy usually defecated. There were no other symptoms. Physical examination showed a well nourished and well developed child. No abnormalities were noted on inspection or palpation of the penis and perineum. The child had been circumcised and had a normal urethral meatus. Frequently a few driblets of urine escaped from the penis—there being no stream at any time. The bladder was slightly distended but no masses could be palpated in the flanks. A catheter was passed without difficulty into the bladder. The urinary sediment was negative. A urethrogram (Fig. 2) showed a saccular out-pocketing on the under side of urethra, just above the scrotal-perineal angle.

On April 30 operation was performed (Fig. 3) under ether anaesthesia. A perineal incision was made just posterior to the scrotum. Dissection was carried in towards the urethral diverticulum which was slightly more than a centimeter in maximum dimension. This was incised along its presenting surface, and the diverticulum was traversed until its orifice into the urethra could be seen. The diverticulum was found to extend forward beneath the urethra in such a way that its flap-like roof acted as a valve when pushed upwards into the urethral lumen. This flap was 5 to 6 mm. long. Using a ring punch, the flap was completely removed, giving the diverticulum a wide opening into the urethra. No attempt was made to excise the diverticulum itself. The incision in the diverticulum was then closed with interrupted sutures, and the wound in the perineum was likewise closed. A suprapubic catheter was left in the bladder.

Post-operatively, the boy had a slight fever for three days. His suprapubic catheter was removed on the 8th day and following this he voided normally by way of the urethra. He was discharged home on the tenth day and he has passed urine freely since that time. His parents remarked with pleasure that he had a very "forceful stream and at times he urinated over the side of his crib." The boy was last seen in March 1947 and was completely asymptomatic.

Discussion

Anatomy and Pathology: Each of these three male patients had a small diverticulum arising from the ventral surface of the urethra. As far as could be determined, the lining of each diverticulum was continuous with that of the adjacent urethra. In none of the three cases was there visible or palpable swelling on the under surface of the penis or in the perineum to give a clue to the correct diagnosis.

The mechanism of obstruction in these three cases seems to have been due to the flap-like action of the anterior roof of the diverticulum as the small pouch became filled with urine. This thin flap would then be displaced upward against the roof of the urethra in such a way that flow of urine into the anterior urethra would be impeded. This mechanism of obstruction has been previously recognized by Watts[1] and Kretschmer.[3]

The effects of this tiny lesion are those of any obstruction in the lower urinary tract. As was all too apparent from our first two cases, there can be dilatation of the posterior urethra, bladder, ureters, and kidney pelves, with extreme destruction of kidney tissue leading to uremia. Superimposed infection can add greatly to the renal damage. However, it is important to point out that early recognition and treatment of the abnormality in the urethra (as in our Case 3) will spare the upper urinary tract from the devastating effects of back pressure and superimposed infection.

Stones may develop in the diverticulum. Infection may occur also in this pouch and can

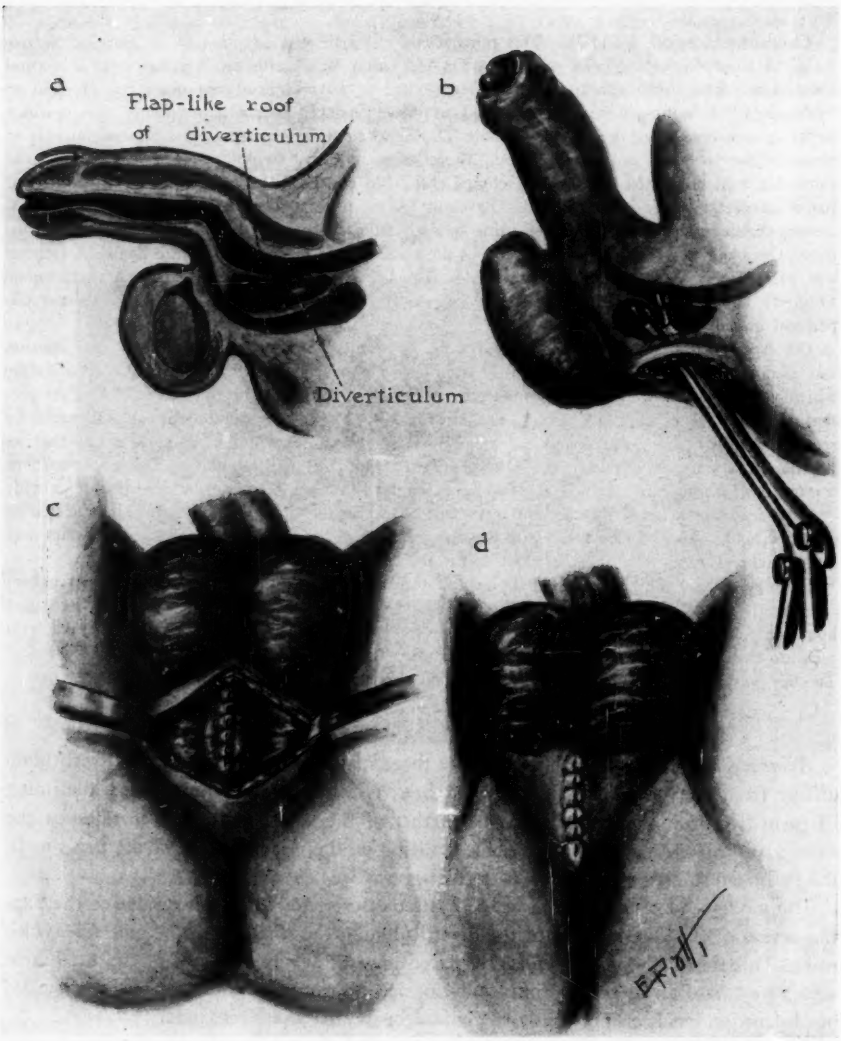

FIG. 3. Operative procedure from Case 3. a. Relationship of urethra and the flap-valve roof at anterior part of the urethra. b. Approach through perineum and through diverticulum to reach the anterior flap of roof, which is cut away with a ring punch. c. Floor of diverticulum sutured. (Excision of the diverticulum is not necessary.) d. Closure of perineal cutaneous wound.

extend into the regional tissues to form an abscess on the under side of penis. We have not seen either of these two complications, but they have been described in the literature.[1,2,4]

Etiology: Several theories have been proposed to explain the origin of these diverticula. Watts[1] has divided urethra outpouches into two groups to indicate that some are congenital and that others are acquired. The latter group includes those which are secondary to urethral stricture, to trauma of various sorts, and also those which have appeared from a cyst which has broken into the urethra. In the congenital group he reiterates the

FIG. 4. Photograph to show position of child, under nembutal sedation, for making a urethrogram. The end of the syringe is covered by a rubber cystoscopic acorn tip held tightly in the meatus.

opinion expressed by others and leans towards the possibility of fetal obstruction of the urethra by preputial adhesions, or by valves near the meatus.

The work of Suter[5] and, more recently, that of Johnson[6] has given support to a theory which is the most attractive one thus far advanced. They associate the lesion with hypospadias, or an incomplete closure of the ventral portion of the urethra during its development. Johnson found evidence of this in an 88 mm. embryo in which there were cyst-like structures beneath the urethra with a lining similiar to that of the urethra. He thought that these might develop a communication with the urethra and thus produce a diverticulum. In corroboration of their opinion we, ourselves, have recently seen a case of mild hypospadias extending to the base of the glans penis in which there was also a small diverticulum of the penile urethra.

Symptoms and Signs: In our three cases, the outstanding symptom was difficulty in voiding. Each infant had a poor urinary stream. In none of them was there a stenosis of the urethral meatus. One child always strained a great deal when attempting to urinate, and usually defecated at such times. Dribbling was a prominent complaint, this apparently

arising from an "overflow" bladder. We failed to note it in our cases, but other observers have commented upon the fact that digital pressure on the perineum (or under side of the penis) after urination would produce more urine—the so-called "pis-en-deux" of the French. Presumably the manipulation will momentarily dislodge the valve-like flap above the diverticulum and allow more urine to escape into the anterior urethra. While the important findings point to obstruction in the flow of urine from the bladder, there may be evidence also of superimposed urinary infection.

Previous authors[1,3] have stated that visible swelling of the scrotum, perineum, or under surface of the penis is invariably present when there is a diverticulum of the urethra. In none of our cases was there any such external swelling. In this respect, our cases differ from all other reported instances of urethral diverticulum.

Diagnosis: The correct diagnosis should be suggested when there is evidence of urethral obstruction, and when such obstruction cannot be explained satisfactorily on some other basis. It is obvious that insertion of sounds or catheters through the urethra toward the bladder will not detect this abnormality, because they will slide over the roof-like flap which partially covers the diverticulum. Such instrumentation should always be attempted when searching for a urethral obstruction, but the free passage of an instrument will only exclude a urethral stenosis. Endoscopy may be of some value, but may be difficult or impossible in very young subjects. It is important to emphasize that urethography offers the best means of examining the urethra and detecting a hidden diverticulum (Fig. 2). It is preferable to make such studies with a water-soluble material and to use a solution of great radio-opacity. Viscoray-opaque—or 35% Diodrast are quite satisfactory. For best urethral visualization, the child should be placed with its back in an oblique position (with respect to the film), with the leg away from the film in extension, and the other leg drawn up in flexion (Fig. 4). This position prevents obscuring any part of the urethra by an overlying bone. The syringe should be fitted with an acorn shaped rubber tip which can be pressed snugly into the urethral meatus. The film should be exposed *while* the iodide solution is being injected.

Treatment: Some form of operation has always been the treatment of choice for diverticula of the urethra. Of Lowsley's[2] 116 collected cases, 82 were treated by surgical means. Campbell[4] recommends operation either by a plastic procedure which restores the continuity of the urethra by closing the neck of the diverticulum; or, as in our third case, by unroofing the diverticulum. We believe that this latter method is a much simpler procedure and emphasizes the fact that removal of the valve-like flap is the important part of any operative undertaking. In our third case this was done without difficulty through a perineal incision—transversing the urethral diverticulum to reach this flap which formed its roof. This roof was cut away, giving the diverticulum a wide opening into the urethra. The floor of the diverticulum and the perineum were repaired by appropriate suture and the wound healed per primum (a supra-pubic drainage catheter was employed for eight days). The outcome of this procedure has been most satisfactory.

Summary

Three cases of urinary obstruction by concealed diverticula of the urethra are summarized. These subjects were five years, two years, and nine months of age, respectively. In the first two patients, the urethral abnormality was unrecognized during life, and the boys died from the effects of obstruction, urinary tract infection, and uremia. In the third

child the diverticulum was detected during life and the urethral obstruction was completely removed by surgical means.

A diverticulum causes urethral obstruction by virtue of its flap-like roof which, when filled with urine, balloons upward and obstructs the urethra. Large diverticula of the urethra may produce a swelling in the perineum or on the under surface of the penis, but smaller pouches—such as were found in all three of our patients—have no external swelling. Urethrographic study is the best method of establishing the correct diagnosis.

Cure of urethral obstruction in these cases can be quickly accomplished by removal of the flap-like roof of the diverticulum. It is not necessary—and indeed not desirable—to remove the diverticulum itself.

ACKNOWLEDGMENTS

We are indebted to Dr. Sidney Farber for the post-mortem examinations in Cases 1 and 2. We are likewise grateful to Dr. E. B. D. Neuhauser for the roentgenologic studies in Case 3.

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SPANISH ABSTRACT

Diverticulo de la uretra masculina

Tres casos de niños con obstruccion urinaria por obstaculos en la uretra posterior fueron vistos en el Hospital de Niños de Boston. En cada caso el tubo urinario estaba obstruido por un tipo de valvula situada en el canal uretral en forma de pequeño diverticulo de la uretra posterior. En ninguno de los casos se apreciaban tumefaccion visible del perine o del pene. Los dos primeros fueron fatales siendo el diverticulo descubierto en la autopsia. El tercer caso fue diagnosticado por examen radiologico de la uretra con sustancia opaca y la obstruccion fue quirurjicamente corregida.

Estos diverticulos determinan obstruccion de la uretra por compresion del techo de los mismos en la luz uretral. El diverticulo se llena con la orina durante la miccion y el techo del mismo fuerza hacia arriba el tubo uretral, determinando de este modo la detencion de la corriente urinaria produciendi manifiesta disuria primero que puede llegar a la anuria, lo cual explica los sintomas des constante excitacion hacia la funcion urinaria con un poco de tenesmo y ligero dolor.

El diagnostico se hace por el examen radiologico de la uretra. El tratamiento consiste en la reseccion quirurjica del diverticulo por via transperineal.

300 Longwood Ave.

THE TREATMENT OF ACUTE TEMPORARY DYSFUNCTION OF THE KIDNEYS BY PERITONEAL IRRIGATION

(Successful Treatment of a Ten-Year-Old Male Child)

By ALLAN BLOXSOM, M.D., AND NORBORNE POWELL, M.D.
Houston, Texas

THE occurrence of an acute temporary dysfunction of the kidneys following incompatible transfusions, sulfonamide blockage, massive trauma, acute glomerulonephritis, surgical trauma, toxemia of pregnancy, mercury poisoning, and renal failure following an acute hepatitis, is associated with a tragically high mortality. Any method lending itself to the temporary disposal of the accumulation of toxic substances from the renal failure with the subsequent salvaging of the patient merits the additional report of the use of that method.

The method of treatment in the following case report is not original. The case is being reported solely as an addition to the very small series[1,2] in the literature of patients salvaged by this form of treatment. However, it does represent the first successful treatment of uremia in a patient with an acute glomerulonephritis following scarlet fever by the application of peritoneal irrigation. Its use may be of value in similar cases.

CASE REPORT*

J.L.R., Jr., a white male aged 10 years, was admitted to the pediatric service of the St. Joseph's Hospital on April 28, 1947, with the complaint of "rapid breathing, swelling, and pain in his abdomen." The child's mother stated that he became ill first on March 24, 1947, with scarlet fever. This infection lasted about two weeks. He was kept in bed most of this time and received treatment with sulfadiazine. At the end of the two weeks he returned to school for nine days. On April 23 he complained that he did not feel well. The mother noticed that he had gained five pounds during the week and was a little puffy about the eyes. She was told by the family physician that he had acute glomerulonephritis.

The swelling increased and he began to complain of abdominal pains with some nausea. On the day before admission to the hospital he developed nose bleeds and vomited clumps of blood. The vomiting relieved temporarily the acute and sharp abdominal pains. He became very short of breath and had to be propped up in bed. There was no cough with the shortness of breath.

The past history is essentially a normal one. There is no family history of kidney disorder, diabetes, tuberculosis, heart disease or rheumatic fever.

The physical examination showed an extremely ill boy, propped up in bed. His respirations were 56 per min.; pulse was 160 per min.; and oral body temperature was 37.8°C. His entire body was edematous and the skin was pale. There were no ecchymoses nor rash on the body. The lips were a bright bluish red color, and were dry and cracked.

His ears, eyes and teeth were normal. The pharynx was hyperemic; there was a thick posterior pharyngeal discharge; and the nose contained a number of hard crusts. When the crusts were removed, considerable thick sanguinous purulent material came with them. There was slight enlargement of the cervical lymph glands.

The percussion note over the chest was dull, but no rales were heard. The heart was enlarged in all directions. There were no murmurs and the rate was 118 per min. and regular. The blood pressure was 186/130 mmHg. The abdomen was distended and an abdominal fluid wave was present. The liver and spleen were not palpable. All extremities were edematous, particularly the lower ones.

Presented at the Annual Meeting of the American Academy of Pediatrics, Inc. in Dallas, December 10, 1947.

(Received for publication August 11, 1947.)

* Dr. R. J. Conte referred this patient to us for treatment.

A diagnosis of acute glomerulonephritis with uremia following scarlet fever was made.

The laboratory findings on admission were: hemoglobin, 10.3 gr. per 100 cc. blood; red blood cells, 3.3 million; and white blood cells, 9.6 thousand, with 80% neutrophiles and 20% lymphocytes. He was type AB, Rh negative. The specimen of urine voided on admission was reddish brown and cloudy. It was alkaline and contained two plus albumen, no sugar, a trace of acetone, with eight to ten coarsely granular and three to four finely granular casts per low powered field. There were occasional hyaline casts. In addition there were 15 to 20 white blood cells and 100 to 150 red blood cells per low powered field. The specific gravity was 1.021.

The blood chemistry findings were: urea nitrogen 34.8 mg. per 100 cc. blood, creatinine 2.39 mg., non-protein nitrogen 70 mg., total protein 9.15 mg. with 4.37 mg. albumin and 4.78 mg. globulin. The blood chlorides were 644 mg./100 cc.

Two hours after admission he voided 60 cc. of reddish brown urine and then became anuric. He vomited about three ounces of light brown material with small red flecks of blood. He was extremely restless and seemed in considerable abdominal pain. 2 cc. of 50% solution of magnesium sulphate were given intramuscularly every 4 hours in an effort to lower the blood pressure. Intravenous glucose was started and later during the first night in the hospital a small transfusion of blood was given.

The morning after admission he was a great deal worse. The edema had increased. The breathing was very rapid and labored. The respiratory rate was 60 per min. The pulse rate increased to 180 per min. and his nail beds were cyanotic. The volume of the pulse was poor and extra systoles were noticed. On catheterization twenty-four hours after admission, 150 cc. of reddish brown urine were obtained.

The cyanosis increased and in the late afternoon on the second day of admission it appeared that the child was going to die. After consultation with the urologist (N.P.), it was agreed to start peritoneal irrigation after the method of Frank, Seligman and Fine[1] and the subsequent report of Goodyear and Beard.[2]

Method of Treatment

About 32 hours after admission to the hospital, irrigation was undertaken. Modified mammalian Tyrode's solution was prepared for the irrigating solution by adding to each liter of distilled water 8.0 gm. sodium chloride, 0.2 gm. potassium chloride, 0.1 gm. calcium chloride, 0.1 gm. magnesium chloride, 0.05 gm. sodium biphosphate, 1.0 gm. sodium bicarbonate, 1.5 gm. dextrose, 0.1 gm. sodium sulfadiazine, 0.5 mg. heparin and 5,000 units of penicillin. The solution was made up in one liter infusion flasks and autoclaved, with the exception that the sodium bicarbonate, sodium sulfadiazine, heparin and penicillin were withheld and added to each flask as it was put into use. The sulfadiazine and penicillin were included to combat infection, and heparin was added to prevent fibrin formation and adhesions. As will be pointed out later, streptomycin perhaps should be added for its antibiotic power.

The irrigating tubes, two No. 30 F. mushroom catheters, were inserted by Dr. J. Peyton Barnes through a high McBurney incision above each iliac crest using local anesthesia. The peritoneum was closed snugly around each catheter; the incisions were closed in layers with interrupted #00 catgut; and the skin was closed with the same material. The tubes were anchored in the skin with heavy silk sutures.

The irrigating fluid was started through the right catheter, by a drip method, and was allowed to run in at 150 drops per minute (10 cc.). The left catheter was attached to a sterile flask and all the irrigating fluid was collected and saved for analysis. Twenty-four hours after starting the irrigation, the left catheter became blocked and then the order of irrigation was reversed, using the left catheter as the intake catheter. On the third day when the right catheter became blocked, the order was reversed again; and a Wangensteen suction apparatus was connected to the left catheter. On the fourth day neither catheter would function as the outlet catheter and irrigating fluid escaped freely around the left catheter—the right catheter being used as the intake catheter. The recovered washings were measured as accurately as possible.

Clinical improvement was evident the following morning. The temperature, which had risen to 39.4°C, dropped to 38.9°. The blood pressure dropped to 150/128 mmHg. He seemed brighter when awake, but still had long periods of drowsiness. The edema continued. The pulse rate was 160 per min. A gallop rhythm developed and he began to have a slight cough. The heart was enlarged tremendously and the sounds were poor. A roentgenogram was made (Fig. 1), and was

reported by the radiologist, Dr. P. E. Wigby, as: "A single frontal film of the chest demonstrates extensive pulmonary edema, as well as hydrothorax, throughout both lung fields far more marked on the right side. The only clear area is in the left base. The heart is enlarged generally, entirely compatible with cardio-renal disease."

An electrocardiogram made at this time showed a slight right axis deviation with a sinus rhythm. The rate was 130 per min. with the PR interval 0.16 sec. and the QRS interval 0.06 sec.

Because of the impaired renal function at this time, it was thought best not to start digitalis. However, it was started on the following day after the roentgenographic examination when rales developed in the left upper lobe. He received an initial dose of 4 cc. of tincture of digitalis by

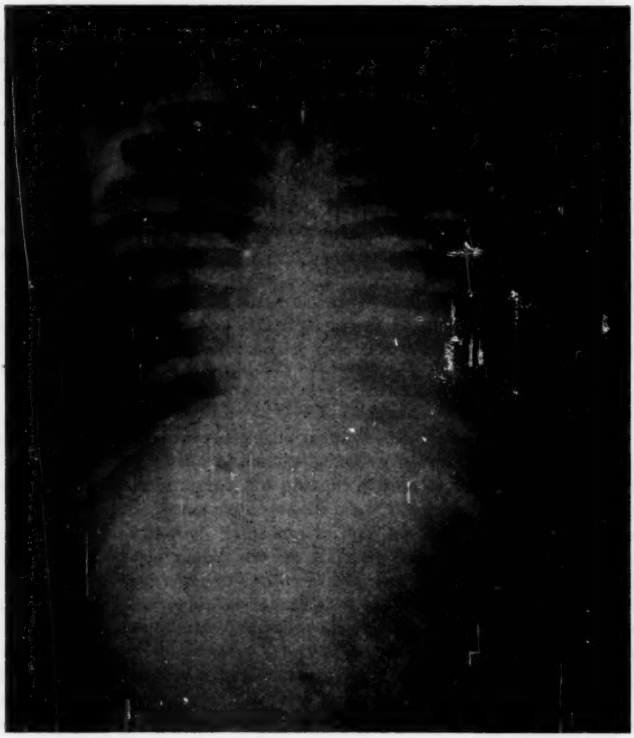

FIG. 1.

mouth, followed by 1 cc. every six hours for four doses, and this was followed with 0.3 cc. daily for two days when the pulse rate had slowed to 80 per min. Digitalis was discontinued at this time and an electrocardiogram showed the T_3 and T_4 waves were inverted. The PR interval increased from 0.16 sec. to 0.2 sec. A normal axis position was then present.

On the same day the heart rate became normal and the rhythm was regular. Two days later a roentgenogram showed a marked improvement of the lung parenchyma and a reduction in the size of the heart. The costophrenic angles were clear and a roentgenogram made on day of discharge from the hospital showed a further decrease in the size of the heart.

Chart No. 1 shows the steady improvement after the start of the peritoneal irrigation. The urinary output increased from almost an anuria to 2700 cc. daily. The blood non-protein nitrogen after an initial dip and rise to 148 mg. per 100 cc. blood dropped rapidly to under 50 mg. Since this did not increase upon removal of the irrigating tubes, it may be presumed that at this time renal function had so increased that the kidneys could handle adequately the azotemia. The level

of the blood chlorides remained almost stationary between a range of 644 mg. per 100 cc. blood on admission to the lowest level of 562 mg. on the second day of irrigation.

Because of the steady improvement of the patient, the drainage tubes were removed on the fifth day after irrigation was started. Removal of the tubes was accomplished with a minimum of discomfort and difficulty, and neither contained any exudates though the peritoneal washings contained bacteria and pus cells. The peritoneal opening on the left side continued to drain for

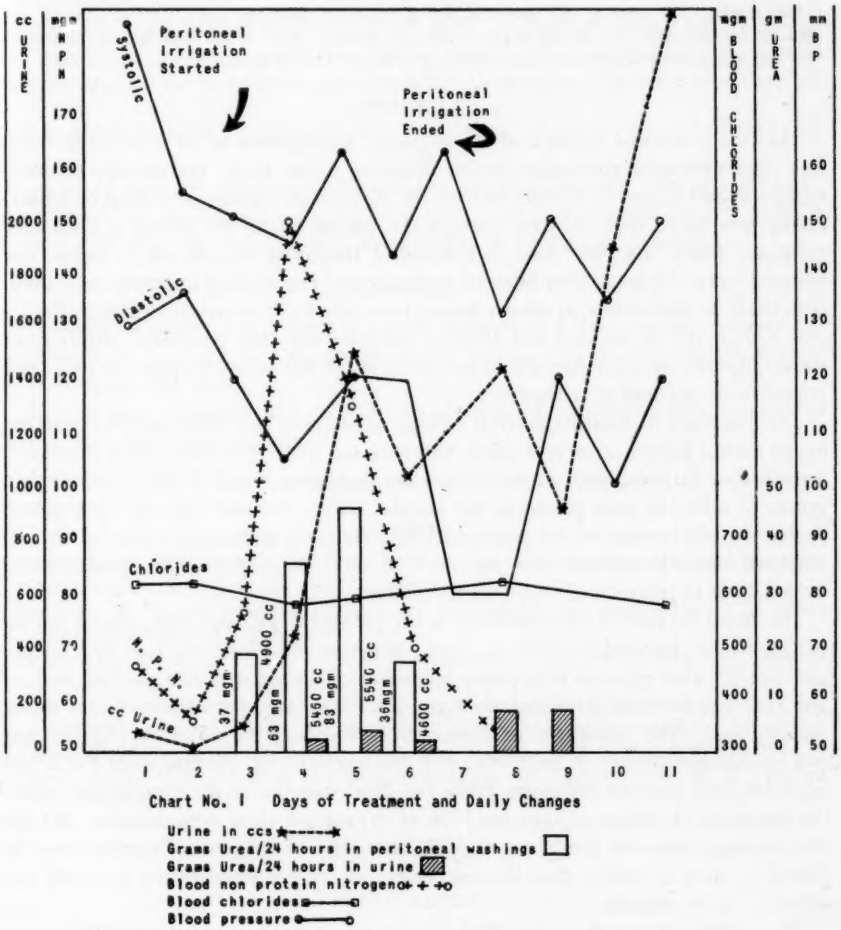

Chart No. 1 Days of Treatment and Daily Changes

Urine in ccs
Grams Urea/24 hours in peritoneal washings
Grams Urea/24 hours in urine
Blood non protein nitrogen
Blood chlorides
Blood pressure

approximately 48 hours and then closed. There was no rise in the blood non-protein nitrogen and the kidneys excreted approximately 10 gm. of urea daily for the following two days. The generalized edema gradually subsided.

Cultures of the peritoneal fluid on the day the irrigating tubes were removed were positive for staphylococci, streptococci, and gram negative bacilli. Streptomycin was given daily in amounts of one gram per 24 hours for five days. A blood sulfadiazine level on the fourth day of irrigation showed a value of 11.2 mg. per 100 cc. blood. For the last 24 hours the sulfadiazine was omitted from the irrigating fluid. The sulfadiazine was started later by mouth when the culture of the peritoneal fluid was positive for staphylococci and streptococci.

The patient was discharged from the hospital on the 23rd day after admission, with a normal temperature and pulse. The abdominal incisions had healed almost completely. The blood pressure on discharge was 136/80 mmHg. The urine on discharge from the hospital was yellow, cloudy, acid, and its specific gravity was 1.015 with a trace of albumin and sugar. The microscopic examination showed occasional granular and hyaline casts with three to four white blood cells and 30 to 50 red blood cells per low powered field. He was given 40,000 units of penicillin to take each night by mouth. When seen two weeks later, he still had an elevation of blood pressure of 140/80 mmHg. The urine at this time was free of red blood cells, but had a trace of albumin with three to five granular and hyaline casts to the low powered field. When seen last on August 20, 1947, he was gaining weight and had a blood pressure of 126/80 mmHg with normal urine.

Comment

The case is the first reported of the successful management of an acute renal failure in a child with acute glomerulonephritis following scarlet fever. The decision to undertake peritoneal irrigation in order to have the peritoneum function as a third or artificial kidney was made after everyone thought the patient would die within a short time. Seligman, Frank and Fine[3] state that untreated laboratory animals die in uremic convulsions 72 to 120 hours after bilateral nephrectomy. The striking improvement—shown objectively by the increase in urinary output from practically an anuria to 120 cc. the first day, 420 cc. the second day, and 1380 cc. the third day after peritoneal irrigation was started together with the decrease in azotemia—made this recovery appear to be directly related to the method of treatment.

The procedure of artificial removal of toxic products of the blood excreted ordinarily by the normal kidney is not new. Abel, Rowntree and Turner[4] in 1914 called attention to a method of dialyzing such products from the circulating blood of living animals by a system of celloidin tubes placed in the vascular system. Putman[5] later in 1923 demonstrated the effectiveness of the peritoneum as a dialyzing membrane. However, the employment of such measures was not practical until the sulfonamides, penicillin and streptomycin to prevent peritonitis were available.

The actual amount of urea recovered in the peritoneal washings was unusual in comparison to that reported in adults by Frank, Seligman and Fine,[1] and later by Goodyear and Beard,[2] who reported respectively recoveries of 20 gm. per 100 cc. fluid and 5.8 gm. as compared to the maximum of 48 gm. per 100 cc. fluid per 24 hours in the patient reported here. The amount of urea removed was enough to reduce rapidly the nonprotein nitrogen content in the blood, and this level did not increase when the irrigating tubes were removed. Seligman, Frank and Fine[3] state that in the experimental animal the peritoneal clearances of urea are 72% of the normal renal urea clearance, and that this clearance does not change significantly after days of irrigation. From the cases reported so far it is evident that the urea content of the peritoneal filtrate may vary considerably in the human.

The routine use of intravenous fluids in peritoneal irrigation is not necessary because of the free exchange of water and electrolytes between the plasma and peritoneal fluid. Seligman, Frank and Fine[3] found in the experimental animal very little protein in the peritoneal filtrate, and no gross edema of the peritoneal membrane. For this reason they think it is unnecessary to add protein to the irrigating fluid. The administration of basal requirements of protein by mouth or intravenously during peritoneal irrigation would seem to be of value in as much as urea can be removed adequately from the blood by this method of treatment.

Digitalis was used with some hesitation because of the impaired kidney function. The

amounts used for this patient produced a lengthening of the PR interval from an initial interval of 0.16 sec. to 0.2 sec. The continued use of magnesium sulphate was considered at first. However, when the blood pressure came down adequately and the oliguria continued, it was feared that the magnesium ion might accumulate and cause death as reported by Mitchell and Nelson.[6] Magnesium sulphate was discontinued, therefore, when it had served its purpose.

Peritoneal irrigation may be discontinued[1] when a patient of average size is free of uremia, while on a normal or less than normal protein intake and the recovery of renal urea clearance of the blood equals or exceeds 7.5 cc. per min. The renal urea clearance (C) is calculated from the equation[7] $C = \frac{UV}{B}$, where V equals the rate of flow (cc. per min.) of urine, U equals the urea nitrogen concentration (mg./100 cc.) of urine, and B equals the urea nitrogen concentration (mg./100 cc.) of blood. The value of B at the end of each collection period of urine should be used in the calculation.

Conclusion

Peritoneal irrigation, functioning as a third or artificial kidney, rapidly dialyzed the urea from a ten year old male child with uremia following an acute glomerulonephritis complicating scarlet fever.

The peritoneal irrigation was followed by a return of sufficient kidney function to prevent the recurrence of the uremia.

We wish to thank Dr. Ruth Pratt and Sister Mary Avitus for their help in preparing the chart of this case.

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Spanish Abstract

Tratamiento de la insuficiencia renal aguda temporal, por el uso de irrigacion intraperitoneal

(Reporte de un caso tratado con exito en un niño de 10 años de edad.)

Los autores refieren la historica clinica de un niño blanco de 10 años de edad con oliguria intensa y uremia que le ponen en grave riesgo su vida, en el curso de una glomerulonefritis aguda consecutiva a una escarlatina. Sindrome que regreso totalmente con el tratamiento intraperitoneal usado. Este metodo de tratamiento puede ser un metodo util en aquellos casos de insuficiencia renal de duracion temporal.

4402 Travis St.

MARKED HYPOKALEMIA IN PROLONGED DIARRHEA: POSSIBLE EFFECT ON HEART

By ALICE H. GAMBLE, M.D., HILDA F. WIESE, PH.D., AND ARILD E. HANSEN, M.D., PH.D.
Galveston, Tex.

REMARKABLY low values for serum potassium were found in an infant with severe diarrhea. This unusual abnormality most likely reflected an extreme deficiency of intracellular potassium which developed because of prolonged diarrhea and maintenance on fluids containing only dextrose and water.[1] In the following report, evidences of marked potassium deficiency are presented from the chemical as well as the clinical viewpoint.

CASE HISTORY

An eight-month-old female infant was admitted to the Children's Hospital of the University of Texas School of Medicine on July 10, 1946, because of severe diarrhea which had persisted for one month. Early in the course of the illness there were 6-8 watery green mucous stools a day, but by the tenth day 18-20 green, watery, blood-streaked stools were passed daily. The child was admitted to a local hospital and during the next week was given 2000 Ml. of 5% dextrose in distilled water by hypodermoclysis and 500 Ml. of blood intravenously. At the end of this time her weight was about 6.6 kg. which represented a loss of approximately 30% of her body weight; inasmuch as her weight was stated to be 9.4 kg. before the onset of her illness. During the month's illness she had refused all solid food and had reportedly taken not over a pint of milk, although 1200-1500 Ml. (40-50 oz.) of tap water were taken by mouth daily.

TABLE I

SERUM ELECTROLYTE VALUES DURING THE MONTH OF HOSPITALIZATION

Date	CO^2 mEq./L	Potassium mEq./L	Sodium mEq./L
7-10-46	11.2	1.3	115
7-11-46	15.1		
7-12-46	21.2	1.9	131
7-13-46		1.5	
7-14-46	22.5		
7-17-46	31.7	1.0	145
7-21-46	22.1	5.9	
7-25-46	20.1	4.8	138
8- 8-46	20.1	5.4	142

On admission, the weight was 6.6 kg., temperature 38.2°C., pulse 100 per min., respiration 24 per min., and head circumference 41.8 cm. The child was acutely ill and was generally weak and fretful. The skin was pasty, eyes sunken, lips parched, and tongue dry and red. The anterior fontanelle was already closed. The skin was extremely white, dry and leathery with obvious loss of elasticity. Over the thighs, the skin was wrinkled and there was loss of muscle tone. Edema which pitted with pressure was present on the dorsum of the feet. No cardiac murmurs were heard and no further physical irregularities were discovered. Laboratory studies disclosed: hemoglobin, 16.1 gm./100 cc. blood; erythrocytes, 6.4 million; leukocytes, 13,500; differential count, 69% poly-

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morphonuclears and 31% lymphocytes; and a trace of albumin in the urine. On admission the serum sodium[2] and potassium[2] values were 115 mEq./l. and 1.3 mEq./l., respectively; and the CO_2 combining power was 11.2 mEq./l. (Values for the above during the following month are shown in Table I.) Serum proteins twelve hours after admission were 6.8 gm./100 cc. total, with 4.0 gm. albumin and 2.8 gm. of globulin. The non-protein nitrogen determined on the blood two days after admission was 27 mg./100 cc. Shigella sonnei was isolated from the stools and identified on two occasions by agglutination tests with Lederle type specific serum. Proteus, pseudomonas and Morgan's bacillus were found frequently in the daily stool cultures.*

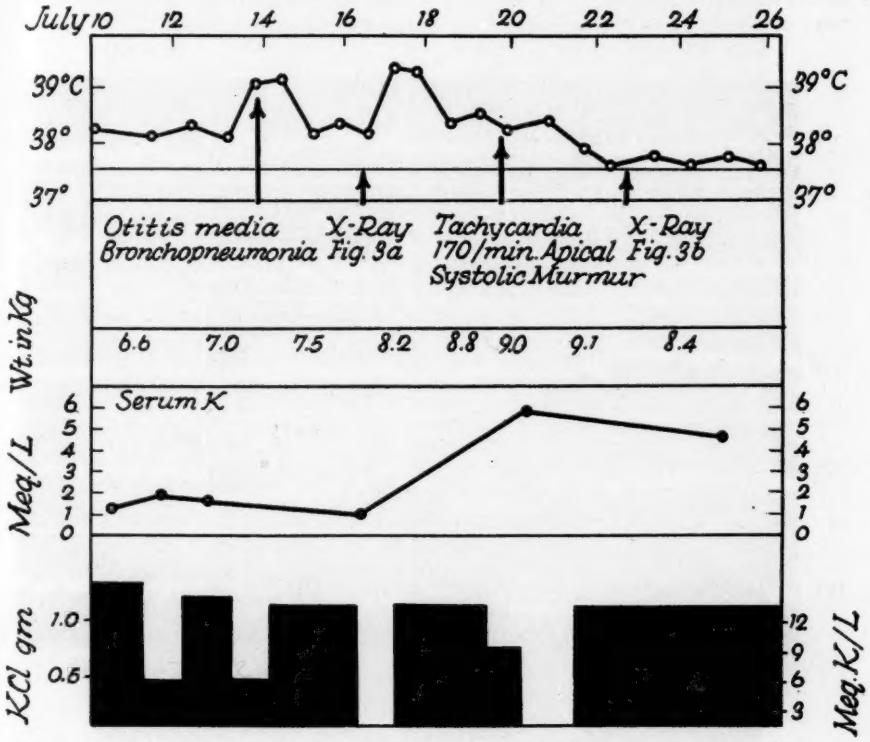

FIG. 1. Course of illness in eight-month-old white female infant with prolonged diarrhea and marked hypopotassemia while receiving potassium parenterally and orally.

Course: During the first 24 hours, the patient received 1760 Ml. of fluid (266 Ml./kg.) which was made up of: 260 Ml. plasma intravenously; 750 Ml. physiological saline; 250 Ml. 2.5% glucose in distilled water; and 1.4 gm. KCl, 2.1 gm. NaCl and 28 cc. of molar racemic sodium lactate in about 500 Ml. of water subcutaneously. The urine output was good within a few hours. During the next 24 hours, the stools decreased in number so the patient was given by mouth, a mixture of one part Darrow's solution to two parts 5% glucose in water. The stools then increased in number so that administration of parenteral fluids only was re-instituted. The total fluid intake, which included daily infusions of either plasma or whole blood, remained about 200 Ml./kg. daily for the first week. Daily vitamin supplements of 100 mg. of ascorbic acid, 4 mg. of vitamin K, and one ampule of the

* Bacteriologic studies were carried on by Dr. MacDonald Fulton, Visiting Professor of Pediatric Research.

B-complex as Solu-B (Upjohn) were given parenterally. On the fourth day, a half skim milk mixture (Dryco) supplying 30 cal./kg. with added potassium chloride was begun. The amount of potassium chloride given daily is shown graphically in Figure 1. The caloric intake was increased gradually so that by the fourteenth hospital day adequate calories, fluid, protein and vitamins were supplied in the diet.

Of especial interest on the fourth hospital day was the development of fever in the presence of otitis media, pharyngitis, and evidence of pneumonia with suppression of breath sounds over the right lower and middle lobes. An accentuation of the leukocytosis occurred. This febrile episode began to subside on the seventh hospital day (Figure 1). Tachycardia and tachypnea were prominent features during this infection. The liver was not enlarged and there were no crepitant rales in the lungs, no edema of the extremities, nor any cardiac murmurs during this period.

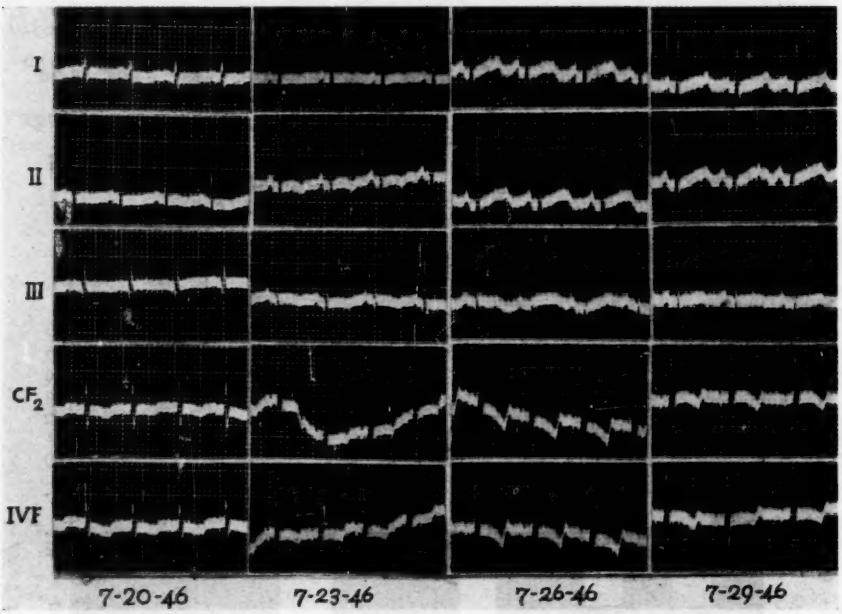

FIG. 2. Serial electrocardiographic tracings during and following development of apical systolic murmur.

On the tenth hospital day a faint systolic murmur at the apex was heard. The electrocardiogram revealed: rate, 171; PR interval, 0.09 sec.; low QRS complexes; depressed S-T segments; low to almost absent T waves in leads I, II and III; and inversion of the T waves in lead IV and CF_2. Serial electrocardiograms (Figure 2) reveal that these findings improved gradually, but the tracings were not normal until six days after the first tracing. This was five days after the serum potassium level had returned to normal. Three days before the first electrocardiogram was taken, the serum potassium level was 1.0 mEq./l.

Roentgenograms of the chest taken before and after the onset of the murmur suggested the presence of some cardiac dilatation (Figure 3). Figure 3A, taken July 17, 1946, during an upper respiratory infection, was in deeper inspiration and from a slightly different angle than Figure 3B; hence, comparison is difficult. However, by superimposing A on B some cardiac enlargement seems evident. These observations appear to be of significance inasmuch as the suggestive dilatation appeared almost simultaneously with the discovery of the cardiac murmur and at which time there were electrocardiographic abnormalities. A third film taken under the same conditions after disappearance

of the murmur and when the electrocardiographic tracings were normal showed the heart to be again approximately the same size as that in Figure 3A.

On July 19, 1946, further complications developed when a small pulmonary infarct appeared, probably from an embolus originating in a thrombosed leg vein. This episode was characterized by sudden cyanosis and dyspnea without a rise in temperature and any elicited friction rub. The child

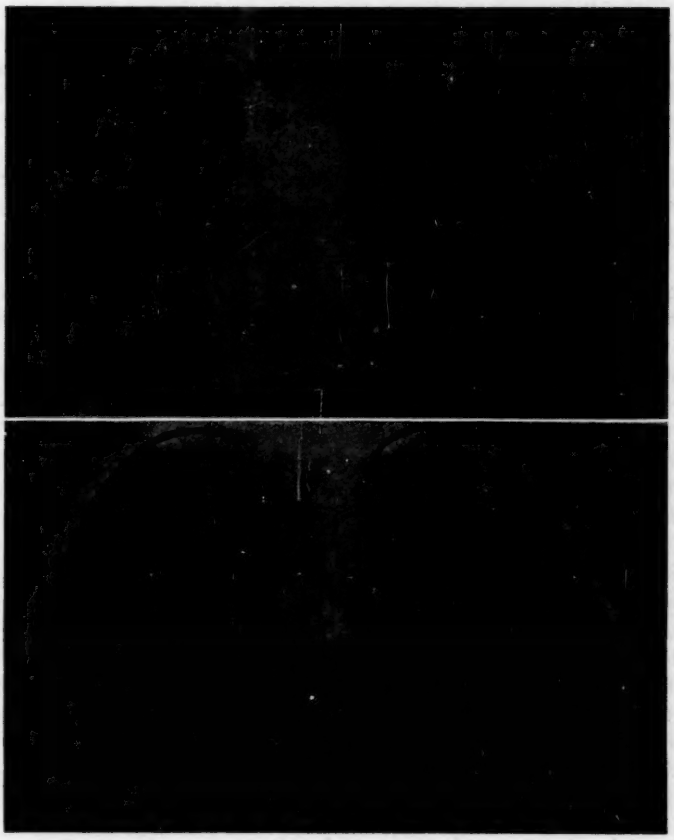

FIG. 3. Roentgenograms of chest: A. (7-17-46) Before development of murmur; B. (7-23-46) Apical systolic murmur present (heavy lines represent cardio-thoracic silhouette of A superimposed on B).

was placed in an oxygen tent with favorable response. On July 27, 1946, an abscess developed on the right thigh from which were cultured beta-hemolytic and non-hemolytic staphylococci, both coagulase positive. The child was discharged after seven weeks of hospitalization, at which time, she was taking a full diet of solid food and almost a quart of boiled cow's milk daily. She was alert and active and able to pull herself up on the sides of the crib, a feat which she had not been able to perform previously. Her weight gain had been 150-200 gm. weekly. She was examined twice in the four months following her dismissal from the hospital; and progress, both physically and mentally, was satisfactory.

DISCUSSION

Serum potassium values (1.0-1.3 mEq./l) as found in this patient are the lowest recorded in any patient with diarrhea who has recovered. Although the serum sodium

of 115 mEq./l on admission was lower than is found in most infants with diarrhea, the depression was not of such magnitude relatively as that of the serum potassium. Robinson[4] in 1939 reported four cases of acute toxic gastro-enteritis in which the serum potassium ranged from 0.58 to 1.30 mEq./l, but none of these patients recovered. In his study no patient in whom the serum potassium was lower than 2.27 mEq./l recovered. Seventy-five per cent of the patients died when the serum potassium values ranged between 2.08 to 2.6 mEq./l.

Several factors appear to be involved in explanation of the low serum potassium in this patient. First, the diarrhea had persisted for a month; thereby allowing for a great loss of potassium in the stools.[1,5] Second, the average diet sufficient in calories will contain an adequate amount of potassium. In our patient, however, all solid food and practically all milk had been refused throughout the month's illness. Boiled tap water had been taken freely, but no minerals had been added. The third factor which undoubtedly contributed to the depletion of the body's store of both sodium and potassium was the administration by hypodermoclysis of 2000 Ml. of 5% dextrose in distilled water. It is known generally that hypertonic glucose given into the peritoneal cavity will draw electrolytes into this compartment and some of the electrolytes so transferred will be excreted in the urine.[6]

The persistence of the low serum potassium even after potassium chloride was administered was a striking feature. In fact, at the end of seven days of fluid replacement therapy and in spite of the administration of 60 mM/l of potassium or 4.5 gm. of potassium chloride, the serum potassium was still only 1.0 mEq./l. Three days later, after a total of 108 mM/l of potassium or 8.1 gm. of potassium chloride had been given, the serum level has risen to 5.9 mEq./l. On the basis of Darrow's work with cat muscle,[7] the body of this child should contain approximately 571 mM/l of potassium with about 7 mM/l in the extracellular spaces and 564 mM/l in the intracellular portion. On this basis, almost one-fifth of the total expected body potassium content was given before the patient's serum potassium level returned to normal.

Another unusual finding was the development of a suggestive alkalosis on July 17, 1946 (Table I). The total CO_2 combining power was 31.9 mEq./l while the serum sodium and potassium were 145 mEq./l and 1.0 mEq./l, respectively. Darrow[8] has reported a case of congenital alkalosis in which the serum potassium was low and the bicarbonate high. It appears that in response to excessive loss of chloride, some of the sodium replaced potassium in the cells and forced out the potassium which was lost in the stools and urine. In this patient, a similar process; namely, excessive sodium administration, may have impeded the return of potassium to the cells. As demonstrated previously and in the metabolic studies carried on by Darrow and co-workers* in Texas, considerable sodium may enter the cells during the first few days when replacement of electrolyte is attempted with potassium and sodium salts. Apparently, the intracellular sodium becomes abnormally high because the potassium cannot be replaced as rapidly as sodium owing to the limited amounts of potassium that can be given safely, and the rapid renal excretion if serum concentration becomes high. The change in muscle composition then tends to lead to high serum bicarbonate for reasons discussed more

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* Under the auspices of the University of Texas Child Health Program aided by grants from the Fluid Research Fund, Yale University; William Buchanan Foundation of Texarkana; Sharp & Dohme, Inc., and Hoffman-La Roche, Inc.

fully later. This patient had probably developed a very large deficit of potassium during the long period of diarrhea and starvation. As shown in Table 1, the serum concentrations of sodium rose from 115 to 131 mEq./l during the first 48 hours of treatment. At this time, deficits of sodium and chloride were restored, but muscle potassium could hardly have been replaced.

Physiologic Effects of Low Serum Potassium: Among the symptoms associated with a low serum potassium are paralyses of various types as reported in cases of chronic nephritis,[9,10] diabetic acidosis,[11,12] and familial periodic paralysis.[13,14,15] In these instances, the serum potassium levels during paralysis ranged from 1.9 mEq./l to essentially normal values, and the paralysis was relieved by the administration of potassium chloride. In this patient, however, there was no paralysis, respiratory or peripheral. In fact, when the serum potassium was in the neighborhood of 1.0 mEq./l, the respiratory rate ranged from 40-90/min., the rapid rate being in response to an upper respiratory infection (Figure 1). There is no instance of paralysis associated with a low serum potassium value reported during the period of infancy from diarrhea, periodic paralysis or adrenal insufficiency treated with an excess of desoxycorticosterone.

Another clinical manifestation associated with abnormal levels of serum potassium, both high and low, has been the demonstration of definite electrocardiographic changes. The electrocardiographic characteristics accompanying a low serum potassium have been demonstrated clearly in cases of familial paralysis,[16] chronic nephritis,[9] and more recently, in the case of respiratory paralysis which developed in a girl recovering from diabetic coma.[11] In the presence of low serum potassium tracings show: a lowering of the T waves with inverted T waves in lead IV; depressed S-T segments; and, in many cases, severe tachycardia. Lowering of the T waves tends to coincide with the lowering of the serum potassium values just as a progressive elevation of the T waves coincides with a progressive elevation of the serum potassium. Similar findings of low to iso-electric T waves with tachycardia were present during comparable periods of potassium depletion in this patient (Figure 3).

Cardiomegaly with the presence of murmurs is an uncommon finding with lowered serum potassium values since the lowering is transitory in most cases. In this patient, however, it seems possible that in the presence of an infection the excessive amount of sodium chloride administered was sufficiently taxing to a myocardium already weakened by prolonged depletion of potassium to facilitate some dilatation and the consequent appearance of a murmur. Recent work by Knowlton[17] shows that sodium chloride potentiates the toxic effect of desoxycorticosterone acetate. While the mechanism of the cardiac lesions produced by this compound is not known, administration of sodium chloride aggravates the effect. Recently, Darrow and Pratt[18] have found that diets low in potassium have little effect on muscle composition, if the diets are also low in sodium chloride. It is unlikely that the volume of fluid administered caused cardiac dilatation in this case, but the presence of abundant sodium chloride may have aggravated heart lesions dependent primarily on the deficit of potassium.

It is interesting to note that the serum bicarbonate remained elevated during this period of cardiac abnormality which finding is further suggestive of inadequate potassium in the myocardium. Darrow[19] also has found that the concentration of serum bicarbonate varies directly with intracellular sodium and inversely with total potassium of muscle, if sufficient water and salt are given to maintain a balance except for either chloride or potassium. In other words, there is a biologic equilibrium between extra-

cellular bicarbonate and muscle composition, so that the final equilibrium is much the same for either chloride or potassium deficiency. When the patient was treated with sodium chloride and potassium chloride, the retention of potassium was insufficient to replace the deficit as is evidenced by the low concentration of potassium in the serum and the electrocardiographic changes. Under these circumstances serum bicarbonate would tend to be maintained at a high level, and the subsequent return of bicarbonate concentration to normal is therefore evidence of restoration of muscle potassium and decrease in the abnormally high intracellular sodium.

There is experimental evidence[20] to show that pathologic cardiac changes result from prolonged potassium depletion. Hence, it is possible that in this patient small areas of myocardial scarring might remain indefinitely although the heart size and the electrocardiogram became normal and the murmur disappeared five days after the serum potassium rose to normal.

Summary

An extremely low concentration of potassium was found in the serum of an infant with diarrhea of one month's duration. In spite of the daily administration of potassium choride, the hypokalemia (1.0-1.3 mEq./l) persisted for one week. The serum potassium returned to a normal level after the administration of a total of 108 mM/l of potassium or about one-fifth of the estimated content of the body. During the hypokalemic state, definite cardiac changes developed, as evidenced by marked tachycardia, apical systolic murmur, and electrocardiographic changes. These abnormalities improved, and the heart was normal five days after the serum potassium returned to a normal level. Recovery was complete, and examination of the infant four months after dismissal showed her to be normal in all respects.

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SPANISH ABSTRACT

Marcada Hipokalemia en los diarreas prolongadas: efectos posibles en el corazon

Una extraordinario descenso en la concentracion sanguinea del potasio fue encontrada en un niño que sufrio una diarrea de un mes de duracion. A pesar de la administracion diaria de cloruro de potasio (1.0-1.3 mEg/1), la hipokalemia persistio durante una semana.

El potasio volvio a sus niveles normales despues de la administracion de un total de 108 m.m. de potasio o sobre 1/5 de la cantidad total estimada como normal en todo el cuerpo. Durante el estado de hipokalemia se apreciaron cambios cardiacos con marcada taquicardia, murmullo sistolico de la punta y cambios electrocardiograficos. Todas estas anormalidades fueron desapareciendo hasta restaurarse la normalidad cardiaca cinco dias despues de que los niveles de concentracion del Potasio en el sanguineo eran normales.

El restablecimiento fue completo y un detenido examen del niño cuatro meses despues mostro que era normal en todos sus aspectos.

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THE AVERAGE LENGTH OF STAY IN THE HOSPITAL OF INFANTS BORN PREMATURELY

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ANY public or private agency administering a medical care program needs certain basic medical data to plan its program. In the field of maternal and child health, one fact of importance is the average length of hospital stay of newly born premature infants. This basic data assists in planning for such budgetary items as: reimbursement for hospital care; payment for pediatric consultation service; and estimation of the number of beds (incubators, heated cribs and bassinets) needed to care for the total number of premature infants born annually in any community.

TABLE I

AVERAGE LENGTH OF HOSPITAL STAY OF PREMATURE INFANTS, FROM REVIEW OF AMERICAN LITERATURE—1927–1946

Author	Place	Weight Group At Birth	No. of Prematures In Series	Average Length of Hospital Stay
	Only Premature Infants Who Survived Hospital Stay			
Goltman[1]	Hospitals in Memphis, Tenn.	Not stated	137	20.52 days
Rascoff[2]	Beth-El Hospital, Brooklyn, N.Y.	5 lb. or less	67	24.6
Wilcox[3]	Sloane Hospital, New York City	5.5 lb. or less	247	28.8
Swanson, et al[4]	Chicago Lying-In, Chicago, Ill.	5.5 lb. or less	526	17.3
Waddell, et al[5]	University of Virginia Hospital, Charlottesville, Va.	5.5 lb. or less	286	24.6
	Includes Premature Infants Who Died in Hospital			
Kotz, et al[6]	Sibley Memorial Hospital, Washington, D.C.	5 lb. or less	27	33
Wilcox[3]	Sloane Hospital, New York City	5.5 lb. or less	330	20.5
Newberger[7]	Seventeen hospitals in Illinois	5.5 lb. or less	900	18
	Not Stated Whether It Includes Premature Infants Who Died in Hospital			
Hess, et al[8]	Michael Reese Hospital, Chicago, Ill.	All weights	761	39.2
Einhorn[9]	Brady Maternity Hospital, Albany, N.Y.	5.5 lb. or less	204	30.4
Swanson, et al[4]	Michael Reese Hospital, Chicago, Ill.	5.5 lb. or less	618	27.4
	Miscellaneous			
*Newberger[7]	Seventeen hospitals in Illinois	5.5 lb. or less	637	24.5
**Crawford, et al[10]	Philadelphia Lying-In Hospital, Philadelphia, Pa.	5 lb. or less	250	41.1

* Does not include premature infants dying in first 3 days of life.
** Does not include premature infants dying in first 2 days of life.

From the Bureau of Child Hygiene, New York City Department of Health.
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A review of the American literature for the past twenty years reveals that there is relatively little information on the average length of stay of newly born premature infants in hospitals. Table I summarizes the information available.

It will be seen from Table I that there is considerable variation in the method of reporting. Some authors do not include premature infants weighing more than 5 pounds at birth; others include premature infants weighing more than 5½ pounds. There is also variation as to whether a particular series includes the premature infants who die in the hospital, as well as those who are discharged alive.

Table I shows that, for the series including only those infants who survived in the hospital, the average stay ranges from 17.3 to 28.8 days, with the majority falling between 24 and 28 days. For the series including both the premature infants who survived and those who died in the hospital, the average stay ranges from 18 to 33 days, with the majority falling between 18 and 20 days. In other authors' series the average stay ranges from 24.5 to 41.1 days.

With the advent of the Federal Emergency Maternity and Infant Care Program it has been possible to calculate the average length of hospital stay of premature

TABLE II

AVERAGE LENGTH OF HOSPITAL STAY PAID FOR BY EMIC FOR PREMATURE INFANTS IN NEW YORK CITY

(Cases Closed in 1944 and 1945)

No. of Days Paid for	No. of Cases	
	Discharged Alive	Died
1– 5	30	10
6– 10	49	4
11– 15	60	4
16– 20	54	0
21– 25	39	0
26– 30	20	0
31– 35	23	1
36– 40	20	2
41– 45	11	1
46– 50	7	0
51– 55	9	0
56– 60	5	1
61– 65	3	0
66– 70	7	1
71– 75	4	0
76– 80	2	0
81– 85	4	0
86– 90	0	0
91– 95	0	0
96–100	3	0
Total	350	24
Mean Paid For	24.4	16.3
σ of Mean	1.02	3.9

infants for whom the EMIC Program paid for hospital care in New York City. This sample includes premature infants (birth weight of 5½ pounds of less) or infants who were diagnosed as premature, when weight was not stated, for whom the EMIC Program paid for hospital care in New York City in 1944 and 1945 (cases closed in 1944 and 1945).

Table II shows that the average length of hospital stay paid by EMIC for those premature infants who were discharged alive is 24.4 days ± 1.02. The average length of hospital stay paid for by EMIC for those premature infants who died in the hospital is 16.3 days ± 3.9.

It should be recalled that one of the policies of the EMIC Program is not to pay for hospital care of any newborn infant while the mother is in the same hospital. In other words, the EMIC Program pays for hospital care of a newborn infant only after the mother is discharged from the hospital. It has been found that, in New York City, a maternity patient delivered under EMIC, stays an average of 9.8 days in the hospital following delivery. This number of days (9.8) must, therefore, be added to the mean number of days paid for by EMIC for hospital care of premature infants, in order to arrive at the actual average number of hospital days which premature infants under the New York City EMIC Program received. This then becomes:

For premature infants discharged alive, 34.2 days.

For premature infants who died 10 days of age or over, 26.1 days.

Discussion

It is apparent from the above data, that the average hospital stay of newly born premature infants cared for under the Federal Emergency Maternity and Infant Care Program is slightly longer than that of comparable data published in the American literature during the past twenty years. The policy of the EMIC Program has been to pay for care as long as the attending physician deemed this necessary, taking into consideration the condition of the patient only. In other words, under the EMIC Program, the medical status of the infant has allegedly been the only determining fact. The family's ability to pay, therefore, did not play a role in determining the extent of hospital stay for premature infants.

Summary

1. A review of the American literature reveals an average length of hospital stay of premature infants, as follows:

a) In a series which included only those premature infants who survived the average range stay was 24 to 28 days.

b) In a series which included both those premature infants who survived and those who died the average stay was 18 to 20 days.

2. In a sample of premature infants, for whom the EMIC Program paid for hospital care, the average length of hospital stay was:

a) In the sample which survived, 34.2 days.

b) In the sample which died 10 days of age or over, 26.1 days.

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SPANISH ABSTRACT

El tiempo medio de estancia en el Hospital de los Recien Nacidos Prematuros

Una revision de la literatura americana en los ultimos veinte años en relacion con el promedio de estancia en el Hospital de los Prematuros muestra algunas variaciones con respecto a los demas lactantos. Para las series que incluyen solamente aquellos niños que sobreviven en el Hospital, el promedio de estancia oscila entre 17.3 y 28.8 dias correspondiendo la mayoria entre 24 y 28 dias. Para la serie que incluye los prematuros que sobrevivieron y los que murieron en el Hospital el promedio oscila entre 18 y 33 dias correspondiendo la mayoria a 18 y 20 dias.

Los autores han analizado la fecha en que los prematuros ingresan bajo el cuidado del Servicio Federal de Emergencia de Maternidad e Infancia. Esta serie se refieren a 350 prematuros que han sobrevivido y 24 prematuros muertos en el Hospital. El promedio de estancia en los 350 prematuros es de 34.2 dias y de 24 niños lactantes es de 26.1 dias.

Atendidos bajo los beneficios del EMIC ha sido posible determinar estadisticamente el tiempo de duracion de los niños en el Hospital, cuyos servicios son pagados por el EMIC. Los autores creen que de esta manera puede obtenerse un promedio de mayor duracion en la estancia hospitalaria como se comprueba comparando con otros datos al respecto en la literatura.

125 Worth St.

A STUDY OF AN ENRICHED CEREAL IN CHILD FEEDING

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THE value of a special enriched breakfast cereal in feeding elementary school children was studied during the school year 1943 to 1944 and again during 1944 to 1945. The children used in the investigation were among those receiving a school lunch upon the advice of a physician or nurse in the school system of which the children were a part, because they had been found to be more than 10% underweight during the fall routine medical examination. Their home dietaries were inadequate, as shown by calculations and by medical and nutritional observations on the children themselves, and the school lunches failed to compensate for the poor home food intake. The duration of the study during each school year was seven months. None of the persons making the technical evaluations knew to which experimental group individual children belonged.

METHODS OF THE STUDY

Experimental Subjects: During each of the two years during which the study proceeded, three groups of children constituted the experimental subjects, as stated; these averaged slightly over 11 years of age, and were matched initially as to age, sex, response to the medical observations and nutrition tests, family economic status, and type of school lunch received. The children were grouped as follows in this investigation: In addition to the school lunch, Group A received the enriched cereal; Group B received a common farina of equal caloric value; and Group C received no cereal at school. Of 55 children initially in each of the three experimental groups during the first year and 50 the second, 39 children in each group completed the first year of the investigation; and 34, 20, and 34 respectively, finished the second year. The decrease in participating children resulted from various causes, chiefly from extensive moving of parents during war years, and consequent transferring of children out of the school in which they were enrolled.

Feeding Plan: The cereal was fed to the children at school in the middle of the morning session. No changes were made in the school lunch program except to insure that the children in the respective experimental groups were matched properly as to the lunches received, and that the lunches eaten by all of the children were as closely similiar as possible.

One-week complete dietaries were recorded in the home of each child at two periods of the study, under the supervision of a school nurse. No effort was made to guide the family in a better dietary selection until after the study was concluded.

There was a general decrease in the adequacy of the home dietary (initially poor) in all cases, after the child was placed in a school lunch program. This apparently resulted from the generally poorer dietaries found to pertain during the winter months in the Pennsylvania mass studies in human nutrition and to the further fact (as ascertained from home visits to the families) that the families paid even less attention to the children's

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home feeding program after the children were enrolled in a school lunch. This somewhat downward trend in the home dietaries was common to most children in the study. There were no significant differences between the average intake of energy and the major nutrients in the average home dietaries of the experimental groups at the times for which diet records were kept and calculated.

The first year, the combination of the home and school lunch intake of most of the children was below the recommended intake for children of the same sex and age in energy and in most of the nutrients for which calculations currently are made. The second year's diets were similar, except for being somewhat higher in vitamin A. During this second period, the combined vitamin A of the home and school dietaries (fed chiefly as the pro-vitamin) exceeded on the average the recommendations of the Food and Nutrition Board, National Research Council, but met only about three-fourths of the intake recommended by Munsell.[1]

Composition of the Cereals: The two cereals used in the study had the following compositions:

	Enriched Cereal, fed to Group A	Common Farina, fed to Group B
Caloric value (calories per 30 grams dry weight*)	108.0	108.0
Protein (grams per 30 grams dry weight)	5.5	3.5
Carbohydrate (grams per 30 grams dry weight)	18.5	22.9
Fat (grams per 30 grams dry weight)	0.7	0.1
Calcium (milligrams per ounce)	220.0	6.0
Phosphorus (milligrams per ounce)	145	38.0
Iron (milligrams per ounce)	7.5	0.2
Copper (milligrams per ounce)	0.3	x
Thiamine (milligrams per ounce)	0.6	0.015
Riboflavin (milligrams per ounce)	0.9	x
Niacin (milligrams per ounce)	6.0	x
Pantothenic acid (milligrams per ounce)	2.8	x

* "Dry Weight" indicates the dry cereal as it is in the package and does not take into consideration the small amount of moisture present in cereal in the dry state.

The protein of the enriched cereal was of a pre-digested type.

The quantity of cereal of the two respective types fed daily during the five days of the school week was one ounce dry. The cereal was served cooked and hot, with two teaspoonfulls of sugar and four ounces of milk. The sugar and milk were common to the two cereal groups.

Medical and Nutritional Observations and Tests: The following observations and tests were made on the children the first year, initially and at the close of the experimental period—approximately seven months later: blood tests were made for hemoglobin by the Newcomer[2] method; red cell count as described by Hawk[3]; hematocrit by the method of Van Allen[4]; vitamin A by the method of Kimble[5]; carotene by the method of Kimble[5]; ascorbic acid by the method of Mindlin and Butler[6] with a modification introduced by Bessey[7]; protein by the method of Barbour and Hamilton[8]; albumin by the method of Kingsley[9] with a slight modification by Urbach; and phosphatase by the methods of Wiese[10] and of King and Armstrong.[11] Urine tests were made for thiamine and riboflavin by the method of Holt and Najjar.[12]

Medical and dental observations, observations for skeletal maturity, and microphotometric measurements of skeletal mineralization were made according to the techniques followed in the Pennsylvania mass studies in human nutrition described by Mack and Smith.[13]

The medical examinations included a numerical rating by a pediatrician based on such factors as skin condition, presence or absence of pallor, overall skeletal status, musculature, subcutaneous tissue, plantar contact, hair lustre, nervous habits, appearance of alertness, and appearance of fatigue. The same pediatrician assigned the scores throughout the study.

The dental score used for statistical purposes in the study was the DMF/n factor of the U.S. Public Health Service. This is the sum of the decayed, missing (erupted but extracted), and filled permanent teeth divided by the number of permanent teeth which had erupted at the time of the examination.

Weight status was ascertained according to the method of Pryor[14, 15] in which the weight was calculated as a plus or minus percentage of the weight suggested on a sex, age, height, iliac width, and lateral chest basis.

Condition of the conjunctiva, presence or absence of corneal vascularization, condition of the tongue, and condition of the gingiva were observed by means of the biomicroscope. In recording observations on the conjunctiva, the sclera was divided arbitrarily into 12 zones per eye; and the prevailing condition in each of the 24 zones of both eyes was recorded as opaque; markedly translucent; translucent; mildly translucent; or transparent. The number of zones exhibiting each of these conditions primarily was counted.

In observing corneal vascularization, the depth of penetration of capillary loops into the cornea was noted, and the number of loops or arcades involved in corneal vascularization was recorded. Records on the tongue and gingiva were made in a standard manner, as nearly uniform throughout as possible.

The findings with the biomicroscope were not regarded as diagnostic; they merely were recorded as observations made in as nearly an objective manner as possible without reference to specific causal relationships.

Dark adaptation was measured by the use of the biophotometer, using the value obtained after exposure to the standard bright light for five minutes, with the subsequent reading made between 20 and 25 seconds after the end of the light exposure period.

The first year of the study serum albumin tests on blood were made only during the final tests; whereas, this determination was made at both test periods the second year. Analyses for vitamin E in blood according to the method of Quaife and Harris[16] were made initially and finally the second year of the study, but not during the first.

Findings of the Study

Tables I and II give a summary of the findings of the study during the two respective years.

Discussion

First Year Study

Hematologic Values: During the first year, the average hemoglobin values in all three experimental groups of children fell slightly, although the change was not significant statistically. The red cell count in Group A (those receiving enriched cereal) experienced

TABLE I: Comparative Data on Nutritional Status of Children in Cereal Study—Group I

TABLE I: COMPARATIVE DATA ON NUTRITIONAL STATUS OF CHILDREN IN CEREAL STUDY—GROUP I

Nutrition Test or Observation	Special Cereal Group		Farina Group		No Cereal Group	
	Test I	Test II	Test I	Test II	Test I	Test II
BLOOD VALUES						
Hemoglobin (g. per 100 cc. blood—Average)	12.0 ±0.13*	11.7 ±0.12	12.0 ±0.14	11.5 ±0.09	12.4 ±0.12	11.6 ±0.10
Red Cell Count (million cells per cmm.—Average)	4.31±0.06	4.28±0.03	4.29±0.05	4.19±0.04	4.40±0.02	4.22±0.03
Hematocrit (per cent packed volume—Average)	37 ±0.6	38 ±0.3	37 ±0.4	37 ±0.3	36 ±0.3	38 ±0.3
Vitamin A (μg. per 100 cc. plasma—Average)	21.4 ±0.81	23.4 ±0.80	23.6 ±1.15	22.7 ±0.58	23.5 ±0.75	24.6 ±0.81
Percentage of children 30 μg. and above	5.0% of children	20.0% of children	17.8% of children	5.3% of children	10.6% of children	11.2% of children
Carotene (mg. per 100 cc plasma—Average)	0.13±0.01	0.13±0.02	0.13±0.01	0.14±0.03	0.13±0.02	0.13±0.01
Ascorbic Acid (mg. per 100 cc. plasma—Average)	0.77±0.08	0.92±0.08	0.80±0.06	0.82±0.07	0.60±0.05	0.64±0.05
Percentage of children 1.20 mg. and above	22.5% of children	39.5% of children	18.4% of children	21.1% of children	20.6% of children	21.7% of children
Total Protein (g. per 100 cc. serum—Average)	6.23±0.07	5.47±0.08	6.15±0.09	5.47±0.08	6.31±0.06	5.80±0.08
Albumin (g. per 100 cc. serum—Average)	Test not used	4.28±0.11	Test not used	4.31±0.07	Test not used	4.47±0.08
Phosphatase (comparison of first and second tests, percentage of children showing improvement)	56.8% from first to second test		55.2% from first to second test		37.5% from first to second test	
URINE VALUES Thiamine (μg. in one hour, fasting sample)	2.08±0.25	2.38±0.32	2.22±0.34	2.26±0.58	1.74±0.20	1.54±0.18
Riboflavin (μg. in one hour, fasting sample)	22.25±2.10	28.19±2.44	45.20±4.18	24.46±2.43	55.13±4.33	20.70±1.19
PHYSICAL OBSERVATIONS Pediatrician's Rating (comparison of first and second tests, percentage of children showing improvement)	40.6% from first to second test		25.6% from first to second test		10.7% from first to second test	
Weight Status (comparison of first and second tests, percentage of children showing improvement)	33.5% from first to second test		30.0% from first to second test		14.7% from first to second test	
Skeletal Maturity (percentage of children in optimum class)	62.5%	72.5%	66.7%	66.7%	65.2%	62.4%
Skeletal Mineralization (percentage of children in optimum class)	12.5%	17.5%	10.0%	0.0%	10.0%	0.0%
Dental Status (DMF/n factor)	0.26±0.22	0.27±0.33	0.32±0.19	0.36±0.27	0.31±0.24	0.39±0.25
Condition of the conjunctiva (comparison of first and second tests, percentage of children showing improvement)	9.7% from first to second test		0.0% from first to second test		4.8% from first to second test	
Corneal invasion (comparison of first and second tests, percentage of children showing improvement)	18.8% from first to second test		10.5% from first to second test		2.9% from first to second test	
Condition of the tongue (comparison of first and second tests, percentage of children showing improvement)	27.5% from first to second test		12.8% from first to second test		4.4% from first to second test	
Condition of the gingiva (comparison of first and second tests, percentage of children showing improvement)	30.0% from first to second test		5.2% from first to second test		2.1% from first to second test	
Dark Adaptation (comparison of first and second tests, percentage of children showing improvement)	62.5% from first to second test		64.1% from first to second test		63.9% from first to second test	

* Standard error of the mean.

TABLE II: Comparative Data on Nutritional Status of Children in Cereal Study—Group II

Nutrition Test or Observation	Special Cereal Group		Farina Group		No Cereal Group	
BLOOD VALUES	Test I	Test II	Test I	Test II	Test I	Test II
Hemoglobin (g. per 100 cc. blood—Average)	12.0 ±0.14*	11.2 ±0.11	12.1 ±0.16	11.3 ±0.12	12.3 ±0.15	11.5 ±0.13
Red Cell Count (million cells per cmm.—Average)	4.24±0.03	4.07±0.06	4.28±0.11	3.99±0.11	4.27±0.03	4.21±0.06
Hematocrit (per cent packed volume—Average)	37 ±0.84	36 ±0.68	36 ±1.12	37 ±0.56	38 ±0.51	38 ±0.51
Vitamin A (μg. per 100 cc. plasma—Average)	26.5 ±1.08	26.0 ±0.63	23.9 ±1.18	23.6 ±0.88	25.8 ±1.51	26.0 ±0.80
Percentage of children 30 μg. and above	32.3% of children	47.1% of children	20.0% of children	30.0% of children	44.1% of children	38.2% of children
Carotene (mg per 100 cc. plasma—Average)	0.14±0.02	0.14±0.01	0.10±0.01	0.10±0.01	0.12±0.02	0.11±0.01
Ascorbic Acid (mg. per 100 cc. plasma—Average)	0.73±0.07	1.03±0.08	0.52±0.11	0.73±0.10	0.97±0.08	0.83±0.08
Percentage of children 1.20 mg. and above	17.6% of children	32.4% of children	15.0% of children	20.0% of children	44.1% of children	35.3% of children
Total protein (g. per 100 cc. serum—Average)	5.81±0.08	5.62±0.07	5.76±0.11	5.70±0.14	5.83±0.08	5.68±0.09
Albumin (g. per 100 cc. serum—Average)	4.16±0.05	3.88±0.05	4.15±0.06	3.97±0.14	4.36±0.05	4.01±0.06
Vitamin E (mg per 100 cc. plasma—Average)	1.50±0.03	1.39±0.03	1.51±0.03	1.50±0.06	1.59±0.04	1.50±0.03
Phosphatase (comparison of first and second tests, percentage of children showing improvement)	56.1% from first to second test		55.0% from first to second test		38.6% from first to second test	
URINE VALUES Thiamine (μg. in one hour, fasting sample)	2.37±0.61	2.75±0.21	1.68±0.23	2.81±0.47	1.40±0.16	1.50±0.11
Riboflavin (μg. in one hour, fasting sample)	21.57±5.50	28.85±2.65	20.2 ±3.21	22.5 ±2.62	24.6 ±2.47	23.9 ±1.41
PHYSICAL OBSERVATIONS Pediatrician's Rating (comparison of first and second test, percentage of children showing improvement)	32.4% from first to second test		20.0% from first to second test		20.6% from first to second test	
Weight Status (comparison of first and second tests, percentage of children showing improvement)	33.5% from first to second test		30.0% from first to second test		14.7% from first to second test	
Skeletal Maturity (percentage of children in optimum class)	65.3%	74.8%	64.2%	64.5%	63.7%	62.6%
Skeletal Mineralization (percentage of children in optimum class)	17.8%	22.4%	16.5%	8.6%	15.3%	2.5%
Dental Status (DMF/n factor)	0.28±0.03	0.29±0.04	0.31±0.04	0.37±0.06	0.30±0.05	0.38±0.06
Condition of the conjunctiva (comparison of first and second tests, percentage of children showing improvement)	5.0% from first to second test		3.0% from first to second test		0.0% from first to second test	
Corneal invasion (comparison of first and second tests, percentage of children showing improvement)	12.0% from first to second test		4.6% from first to second test		0.0% from first to second test	
Condition of the tongue (comparison of first and second tests, percentage of children showing improvement)	43.3% from first to second test		38.0% from first to second test		20.6% from first to second test	
Condition of the gingiva (comparison of first and second tests, percentage of children showing improvement)	61.8% from first to second test		33.0% from first to second test		32.3% from first to second test	
Dark Adaptation (comparison of first and second tests, percentage of children showing improvement)	26.4% from first to second test		25.0% from first to second test		25.3% from first to second test	

*Standard error of the mean.

no significant change during this year; whereas, Group B (receiving common farina), and Group C (receiving no cereal) showed decreases in this value; in both groups of children the odds of probability were greater than 20 to 1 that the change did not occur by chance. In hematocrit readings there were no significant changes in any of the groups.

The tendency toward a slight change downward in hemoglobin in all three groups—together with a decrease in red cell count in all except the enriched cereal group—probably reflected the downward tendency of the home dietaries, which was evident in protein particularly, and in the failure of the school lunch to compensate for the inadequacies in the food served at home.

Vitamin A and Carotene: The average concentration of vitamin A in the blood did not change in any of the groups by an amount which was significant statistically. As for specific children, however, the number exhibiting an arbitrary blood level of this vitamin of 30 μg. per 100 cc. rose significantly from 5.0% to 20.0% in the enriched cereal group; fell significantly from 17.8 to 5.3 % in the farina group; and made no significant change (from 10.6% to 11.2%) in the no cereal group.

Although the enriched cereal contained no vitamin A or pro-vitamin A, this favorable difference in vitamin A blood levels in behalf of the cereal of higher content of total protein—and with protein of a pre-digested type together with a higher concentration of the major B-vitamins—may have been related to protein or members of the B-vitamin complex. Deuel, Hrbetz, Johnston, Rollman, and Geiger[17] concluded on the basis of experiments with rats that protein of high nutritive value has a sparing action on vitamin A. Similiar results were reported by Basu and De[18]. Baumann, Foster, and Moore[19] reported that rat dietaries low in protein reduced vitamin A storage. Dye, Bateman, and Porter[20] have reported that the larger the protein intake—the better the utilization of vitamin A.

Sullivan and Evans[21] have found a delay in the appearance of vitamin A deficiency in dietaries in which thiamine was adequate. Scheunert and Wolfanger,[22] and Scheunert and Wagner,[23] on the other hand, believe that a synergism does not exist between vitamin A and thiamine.

No changes in average carotene blood levels were found in any of the experimental groups of children from the initial to the final tests.

Ascorbic Acid: Blood plasma ascorbic acid average values increased from 0.77 mg./100 cc. ± 0.08 to 0.92 mg./100 cc. ± 0.08 in Group A, a favorable change which was significant by odds of probability greater than 100 to one that it did not occur by chance. The children in Groups B and C exhibited no significant change in this respect.

The percentage of children in the enriched cereal group, the concentration of whose blood plasma ascorbic acid met or exceeded the arbitrary value of 1.20 mg./100 cc. of blood, increased from 22.5% to 39.5% from the initial to the final test period; whereas, those in Group B reaching or exceeding this concentration changed only from 18.4% to 21.1% and in Group C changed from 20.6% to 21.7% during the same period. The change in the first case was significant, but in the other two it was not.

Again, the lack of ascorbic acid in the enriched cereal poses the question of the background for the highly favorable change in the blood plasma ascorbic acid values of the children receiving this cereal and the two control groups. The greater percentage of protein and the pre-digested nature of the protein may have some relationship to the change, since several investigators have reported a protein-ascorbic acid synergy. Thus De Caro and Rovida[24] have reported that egg albumin and cystine increased ascorbic

Dark Adaptation (comparison of first and second tests, percentage of children showing improvement)

26.4% from first to second test	
25.0% from first to second test	
25.3% from first to second test	

*Standard error of the mean.

acid status; whereas, certain amino acids had no effect. Glycine and gelatin actually reduced the level. In experiments on human subjects, Giroud, Ratsimamanga, and Chalopin[25] reported that only about one-half as much ascorbic acid was required to maintain a high level on a high-protein dietary than on a low-protein intake of similiar caloric value. From excretion tests with eight human females, Patterson and Bourquin[26], on the other hand, found that a higher intake of ascorbic acid was required for saturation on a high than on a low protein dietary.

A relationship between thiamine and ascorbic acid, showing that the former has a favorable action on the utilization of the latter, has been reported on the basis of various experimental techniques by Lecoq and Flender[27]; by Kasahara, Nishizawa, and Hirao[28]; by von Deschwanden[29]; by Sure and Theis[30]; by Tul'chinskaya[31]; by Stöger[32]; by Antognini and Delachaux[33]; by Przewoski[34]; by Nishizawa[35]; and by Oshima, Takahashi and Murakami.[36] In some of the aforementioned studies thiamine was administered as such, and in others in combination with other B-vitamins.

In contrast, Pruter[37] has failed to find that thiamine and riboflavin diminished the ascorbic acid deficit developing on a vitamin C-deficient diet.

Protein: Total protein in blood serum decreased from the first to the final test, by values which had statistical significance. These decreases undoubtedly were associated with the fact that the home dietary, initially low in protein in all cases, fell still further in this respect during the course of the experiment; whereas, the school lunch failed to compensate for the low home values.

Tests for serum albumin were not made initially the first year of the study for technical reasons.

Phosphatase: All three groups improved in blood phosphatase values in that many with values initially regarded as too high showed a decrease. Considering those whose phosphatase values fell more than 10% during the study as showing improvement, 56.8% in Group A, 55.2% in Group B, and 37.5% in Group C improved in this respect. Thus the two cereal groups were approximately the same in their phosphatase improvement, with the no cereal group making less progress in this respect. It should be admitted, however, that the significance of phosphate values is not understood fully, and hence it is not known whether or not the direction of change as shown in this study constituted an improvement.

Thiamine and Riboflavin: Urinary thiamine average excretion in a one-hour sample after the first elimination of the day increased by a value which approached—but did not reach—statistical significance in Group A, and made no change which approached significance in Groups B and C. Riboflavin average values in the urines of Group A increased by an amount which was significant by odds of 100 to one, while those in Groups B and C decreased significantly by the same odds of probability. Comparison of the mean change from the initial to the final tests in Group A with that of Group B and Group C, separately, showed that the odds were greater than 100 to one that change in the first was more favorable than that in the second or third.

Pediatrician's Scores: The arbitrary ratings by the same pediatrician throughout the study gave improved scores (increased by 10% or more) to 40.6% of the children in Group A, 25.6% in Group B, and 10.7% in Group C. The differences between Groups A and B, Groups A and C, and Groups B and C were statistically significant in all cases.

Weight: Gains in weight of 10% or more were experienced by 33.5% in Group A, by 30.0% in Group B, and by 14.7% in Group C. There were no statistical

differences between Groups A and B, but the improvement was significantly greater in both of these than in Group C. It was expected that similiar weight improvement would be shown by the two cereal groups, since the caloric value of both cereals was the same.

Skeletal and Dental Status: In Group A, the percentage of children whose skeletal maturation was similiar to that of well nourished children of the same chronological age increased from 62.5% to 72.5%. This technique requires the subjective opinion of one technically trained in this field. In Group B the percentage of children meeting these specifications remained the same, at 66.7%. In Group C the percentage fell slightly, from 65.2% to 62.4%. In skeletal mineralization, the percentage of those who reached the optimum for children of similiar ages as established in the Pennsylvania mass studies in human nutrition changed from 12.5% to 17.5% in Group A, from 10.0% to 0.0% in Group B, and from 10.0% to 0.0% in Group C. The enriched cereal group was superior statistically to the two control groups, both in skeletal maturation and mineralization changes.

In dental ratings, the DMF/n factor approximately remained the same for Group A, increased from 0.32 to 0.36 in Group B, and from 0.31 to 0.39 in Group C.

It is noteworthy that the dental caries rating failed to increase in Group A, while Groups B and C showed approximately the same degree of caries progress as is exhibited on a time basis by children in general who have been included in the Pennsylvania mass studies in human nutrition.

Condition of Tissues as Observed through the Biomicroscope: No statistically significant change was observed in the number of opaque and markedly translucent areas in the conjunctiva of the three groups of children.

In corneal vascularization, not severe initially in any case, 18.8% showed improvement in Group A, 10.5% in Group B, and 2.9% in Group C.

Acute lesions of the tongue were reduced in 27.5% of Group A, in 12.8% of Group B, and in 4.4% in Group C. Acute inflammation of the gums was improved in 30.0% of Group A, 5.2% of Group B, and 2.1% of Group C. The favorable improvement in corneal vascularization and in acute lesions of the tongue and gums shown by children in Group A was greater statistically than that of the other two experimental groups.

Dark Adaptation: Dark adaptation was improved in 62.5%, 64.1% and 63.9% of the children in the respective groups. There were no significant differences between the groups in this respect. At each test period the children were given sufficient preliminary instruction about and practice with the instrument that it was believed that the learning factor was not operative. The school dietary provided 45% of the Munsell[1] and 100 per cent of the Food and Nutrition Board, National Research Council, recommendations for vitamin A, chiefly as carotene.

Second Year Study

The second year of the study, the groups of children were similiar in initial responses to the observations and tests, and in economic status to those participating the first year. Their home dietaries were similiarly poor at the beginning of the study, except for averaging somewhat higher in vitamin A intake than did the first-year children; and they became poorer in certain respects—notably in iron and protein intake—during the course of the study. The school lunch did not compensate for the home dietaries.

The initial medical and nutritional observations and tests gave results which simulated those of the first year's study in the main.

Hematologic Values: The hemoglobin values and red cell count fell in all three groups. In hemoglobin values, the change was such that the odds were less than 20 to one that it did not occur by chance; whereas, in red cell count the drop was significant by odds greater than 100 to one in all cases. There were no significant changes in hematocrit readings.

The above changes, even slightly more unfavorable than those during the first year, were related undoubtedly to the greater decrease, during the study, in home intake of protein and iron with no compensating provision of these nutrients in the school lunch.

Vitamin A and Carotene: Again, the average concentration of vitamin A in the blood did not change statistically in any of the groups, although the percentage of children reaching or exceeding 30 μg. increased from 32.3% to 47.1% in Group A, from 20.0% to 30.0% in Group B, and decreased from 44.1% to 38.2% in Group C. The differences in the change between Groups A and B, A and C, and B and C were significant in all cases.

There were no significant changes in the carotene concentration in the plasma in any of the groups.

Ascorbic Acid: As in the first test, the children in the enriched cereal group improved in blood plasma ascorbic acid level, with odds greater than 100 to one that the change did not occur by chance. Those in the farina group showed some average improvement, but the mean change was not significant statistically. Those receiving no cereal became poorer in this respect. Moreover, the percentage of individual children reaching an arbitrary blood plasma level of ascorbic acid of 1.20 mg./100 cc. or above increased markedly in Group A, somewhat in Group B, and decreased in Group C.

Protein: In common with the first year, blood serum protein mean values became poorer. Serum albumin average values, introduced at both test periods during this year, likewise became poorer. In the case of the total protein and of the albumin, however, the mean changes were not significant statistically, even though they all were in the same direction. The reduction in protein intake in the home dietary during the course of the study undoubtedly was operative in this case.

Vitamin E: Vitamin E blood values, introduced at both test periods during the second year of the investigation, showed no change of statistical significance during the course of the study.

Phosphatase: In common with the first year, blood phosphatase values showed presumable improvement of a comparable order in Groups A and B, but a lesser in Group C.

Thiamine and Riboflavin: Urinary thiamine average values in a one-hour sample were increased significantly in Groups A and B, but not in Group C.

Riboflavin urinary values, on the average, in common with the first year, increased significantly in the enriched cereal group (Group A). They made no significant average change in the farina group (Group B) or in the no cereal group (Group C) children.

Pediatrician's Scores: The children in Group A showed greater average improvement (significant by odds of probability greater than 100 to one), than did those in either of the two other groups. On an individual child basis, 32.4% in Group A gave scores which had increased by 10% or more, 20.0% in Group B, and 20.6% in Group C showed improvement to this extent.

Weight: Children in Group A showed slightly greater weight gains than did those in Group B, but the difference was not statistically significant. Weight improvement was significantly greater in Groups A and B than in Group C, in common with the first year of the study.

Skeletal and Dental Status: The children in Group A were significantly better in their improvement in skeletal maturity and mineralization, and in their failure to show marked dental caries progress than those either in Group B or Group C.

Condition of Tissues as Observed through the Biomicroscope: No significant change in the condition of the conjunctiva was observed in any of the groups. Significantly greater improvement in recession of corneal invasion, condition of the tongue, and condition of the gingiva was shown in the enriched cereal group than in the other two groups. The group receiving the common farina was superior to the no cereal group in recession of corneal invasion, and in improvement of the tongue condition.

Dark Adaptation: Approximately the same number of children showed improvement in dark adaptation in all three groups as in the first year. The percentage of children showing improvement was less the second than the first year; but the initial values were higher—possibly because the home dietaries were somewhat better in vitamin A.

Summary

In a study of the value of adding a daily portion of enriched cereal (together with a standard amount of sugar and whole milk) to the school feeding program of undernourished grade school children whose home dietaries were poor, and whose regular school lunches did not compensate for the inadequate home dietaries, three approximately matched groups during two successive years were fed, respectively, the enriched cereal, an equivalent amount calorically of common farina, and no cereal at school. The feeding program lasted for seven months during each school year.

The enriched cereal was superior to the common farina in percentage of protein; and the protein was of a pre-digested type. It was enriched with calcium, phosphorus, iron, copper, thiamine, riboflavin, niacin, and pantothenic acid.

Hematologic values decreased or showed little or no improvement in any group during both years of the study.

The first two groups were similar to each other and superior to the third in weight gain and in decrease in blood phosphatase during both years.

The enriched cereal group was superior to both of the other groups both years in blood plasma vitamin A and ascorbic acid increase. This was in spite of the fact that the enriched cereal did not contain this nutrient, and that the three experimental groups were closely similar in intake of vitamin A and ascorbic acid at home and at school.

The enriched cereal group, further, was superior to both other groups in the following respects: increase in urinary output of riboflavin; improvement in pediatricians' scores; improvement in skeletal maturity; improvement in skeletal mineralization; retardation of increase in dental caries; recession of corneal vascularization; and improvement in the condition of the gums.

Neither the periatrician, the dental examiner, the person evaluating X-rays for skeletal maturity, nor the medical assistant making the biomicroscopic examinations knew the experimental groups in which the children were placed.

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This report describes one in a series of investigations in the field of human nutrition carried on cooperatively by the aforementioned institutions under the auspices of the Department of Health, Commonwealth of Pennsylvania.

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SPANISH ABSTRACT

Estudio del enriquecimiento de los cereales en la dieta del niño

Un estudio de la importancia de la adicion diaria de cereal enriquecido en los programas de alimentacion escolar para los niños desnutridos que consumen dietas pobres en sus casas y cuya alimentacion regular escolar no es suficiente a compensar lo inadecuado de la dieta de la casa; agrupa tres series de niños estudiados durante dos años sucesivos, en cuya alimentacion se ha usado el cereal enriquecido cantidades equivalentes caloricamente de harina comun y supresion completa del cereal en la escuela. Este programa de alimentacion se ha cumplido durante siete meses consecutivo durante cada año escolar.

El cereal enriquecido fue superior a la harina comun en porcentaje de proteinas; y la proteina fue del tipo predigerida. El enriquecimiento fue hecho con calcio, fosforo, hierro, cobre, tiamina, rivoflavina, niacina y acido pantotenico.

Los valores hematologicos decrecieron o mostraron poco o ningun aumento en todo grupo durante los dos años de estudio.

Los dos primeros grupos superaron al tercero en aumento de peso y disminucion de los fosfatasas

sanguineas durante los dos años y aumento de la tiamina urinaria durante el segundo año. Solamente el grupo alimentado con cereal enriquecido mostro aumento en estos dos ultimos respectos durante el primer año.

El grupo alimentado con cereales enriquecidos fue superior a los otros grupos en los dos años, especialmente en plasma sanguineo, vitamina A y acido ascorbico. Todo ello en relacion con el hecho de que el cereal enriquecido no contenia estos elementos y que los tres grupos experimentales fueron muy similares en el aporte de vitamina A y de acido ascorbico en la casa y en la escuela.

El grupo alimentado con cereal enriquecidos fue superior a los otros dos grupos en los siguientes aspectos, aumento del debito urinario de riboflavina, progreso de la madurez del esqueleto, marcada mineralizacion de su esqueleto, detencion o ausencia de caries dentarias, regresion de vascularizaciones corneales y marcado mejoramiento de sus encias.

Ningun examen pediatrico ni dental para valoraciones radiologicas de la madurez del esqueleto, ni asistencia medica por examenes biomicroscopicos se realizaron en los grupos experimentales en los cuales los niños fueron situados.

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THE AGE INCIDENCE OF POLIOMYELITIS IN CLEVELAND

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AN APPARENT increase in the number of older children and adults attacked by poliomyelitis has been reported by a number of observers who have compared age distribution data of more recent epidemics (after 1930) with those of the years before 1920. Such reports have come from the northeastern, midwestern, and north central states,[1,2,3] from California,[4] from Sweden and Australia[5] and from Germany.[6] Relatively fewer infants and pre-school children have been affected, while the percentile participation of older children and adults has increased. Of course, adults have still remained a minority of patients everywhere.

Maxcy[7] has questioned the reality of such an age shift for several reasons: (1) the shift may be merely an expression of the changing age distribution of the general population; (2) diagnosis may have become more accurate, especially for abortive forms; (3) selective under-reporting may obscure real conditions.

That the epidemiologic pattern of poliomyelitis can be badly distorted by under-reporting was shown by Nelson and Aycock[8] in a thorough analysis of the data for Massachusetts. In brief, they found that of 2300 patients who were registered between 1928 and 1941 with the Harvard Commission for Infantile Paralysis for the treatment of paralysis due to poliomyelitis, 23.1% or almost 1 out of 4 were not reported to the authorities at the time of their acute illness, although most of these unreported patients were attended by a physician. The greatest percentages of unreported cases occurred in non-epidemic years, off season months, small towns, and among infants and adults. One-third of the cases remained unreported in non-epidemic years, more than two-thirds during the months of January through May, nearly one-half in small towns, and over one-half among children less than one year old. On the other hand, only 17% failed to be reported during epidemic years, 13% during the month of August (all years combined), and 15% to 19% among persons from 5 to 15 years old.

Unfortunately, the reporting of poliomyelitis has not been similarly scrutinized elsewhere.

The difficulty of estimating even approximately the number of cases with abortive or non-paralytic poliomyelitis[9] is illustrated by reports from three widely separated areas.

During the 1938 epidemic in Cologne, Camerer and Joppich[10] examined the spinal fluids of 136 siblings or, in institutions, fellow-inmates of children with poliomyelitis. Forty-five, or one-third, were abnormal (chiefly positive Pandy test, infrequently pleocytosis), yet, only 13 of the children with abnormal fluids showed clinical evidence of central nervous system disease such as meningeal signs, reflex changes, minimal paresis, or pain in the limbs. Fifteen had such nonspecific symptoms and signs as fever, upper respiratory infections or gastrointestinal disorders. The remaining 17 children were

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clinically quite well, although one or possibly two developed facial paresis later on. In other words, almost one out of four contacts had laboratory evidence suggestive of poliomyelitis without any clinical symptoms or signs that would have lead a parent, attendant or physician to suspect the disease.

During an explosive outbreak of poliomyelitis among American troops in North China which killed four and badly paralyzed one man in early July of 1946, about 30 men who were garrisoned in the same locality developed symptoms of minor illness, such as headache, vomiting and fever. A lumbar puncture was done on all, and about 80% showed a pleocytosis ranging from 80 to 500 cells per cmm. of cerebrospinal fluid, though neither signs nor symptoms had pointed to involvement of the central nervous system.[11]

Paul et al[12] found normal spinal fluids in poliomyelitis contacts with symptoms of fever, headache, vomiting and sore throat which they suspected, chiefly on epidemiologic grounds, of representing a sort of poliomyelitis minor. The difficulty of drawing the line against non-specific illness is obvious. If the situation in Cleveland should, as it probably does, resemble that described by Paul and his co-workers in part, and in part that discovered in Cologne and in China, then the vast majority of abortive cases here have certainly remained unrecognized.

Poliomyelitis has been reported in the city of Cleveland by age only since 1928. We have analyzed the age features of the disease as it has occurred since then, in the study reported herein. The majority of patients with poliomyelitis in Cleveland are seen at City Hospital. Some of the younger patients are admitted to the Babies' and Children's Division of University Hospitals from where they may or may not be transferred to the City Hospital later on. Only a few are treated in other hospitals or at home. The material used for this study was drawn from the records of the City Department of Public Health and Welfare to which all cases observed in Cleveland are reported, and was checked, where indicated, against hospital charts.

The following considerations were applied to the selection of our material, in order to avoid the errors pointed out by Maxcy.[7]

1. It seemed probable both from the experience of others[9-12] and from the relatively small number of non-paralytic cases seen at the City Hospital (Table I) that many non-paralytic patients, perhaps the majority, escape detection even when, as in epidemic years, both the public and physicians are quite poliomyelitis conscious.

TABLE I

Year	All Cases	Abortive Cases	
		No.	Per Cent
1930	157	14	8.9
1941	134	19	14.2
1944	130	27	20.8
1946	157	26	16.6

Poliomyelitis in the city of Cleveland in four epidemic years (exclusive of cases occurring before July 1st): number of abortive cases relative to total.

As it is not known how the hidden non-paralytic cases might affect the age distribution, we have confined this analysis to paralytic cases only. Only those patients were

included who had either definite paresis, however transient, or certain evidence of encephalitis with or without paresis.*

2. We then tried to assess the extent of under-reporting of paralytic poliomyelitis in Cleveland, but found it difficult to do so. By inquiry from those orthopedists who see perhaps the largest number of paralytic cases in Cleveland, we learned that around March 1, 1947, two of them had already seen 3 or 4 patients each who apparently contracted the disease during the 1946 season but were not diagnosed properly. The orthopedists stated that they each see from "half a dozen to two dozen" patients a year who are cases of unrecognized poliomyelitis. This number is perhaps a little above average. Not all of these patients are reported by them to the National Foundation, and none are reported to the Public Health authorities. One orthopedist stated that many of his patients are young adults; another that most of his are young children who, he believes, passed through an unrecognized acute phase in early infancy. It is known, of course, that an apparently non-paralytic patient may later on develop anomalies, particularly of posture and gait, that can be explained only as sequelae of the old poliomyelitis.

In order, therefore, to minimize the effect of under-reporting for paralytic cases, the sample used in this study was further restricted, in conformance with the findings of Nelson and Aycock,[8] to cases originating in the city of Cleveland in the second six months of the four epidemic years, 1930, 1941, 1944 and 1946. An epidemic year is arbitrarily defined as one having more than 10 cases per 100,000 population.

3. Age morbidity rates were calculated by correlation with population data.

Results

The data are presented in Tables II and III; the rates derived from them are in Table IV and Fig. 1. Attack rates for combined paralytic and abortive cases are added for comparison.

It will be seen that in 1930 the peak of the age morbidity rate curve lay in the 0-4 range, while in the nineteen forties it falls into the 5-9 year range. In fact, children under 5 are attacked about half as frequently as before; those between 5 and 10 up to twice as frequently. There is no change in the 10-14 year group. For those 15 years old and over, the attack rate has more than doubled.

It must be remembered that the size of epidemics under consideration varied between 103 and 143 cases.

Table IV shows that the inclusion of abortive cases would not have changed the picture a great deal.

A seasonal shift in the age distribution of epidemic poliomyelitis has been reported by others;[2,5] namely, a tendency for the median to move upward as the season wears on. Our data (Table V) shows no such definite and consistent pattern.

Discussion

The exclusion of abortive (non-paralytic) cases does not rob a study such as this of its epidemiologic value. As mentioned already, it has come to be recognized that infection with poliomyelitis virus without paralysis is much more widespread than is infection with paralysis. That "silent immunization" with or without non-paralytic illness takes

* Encephalitis without characteristic paralysis may or may not be due to the virus of poliomyelitis. Some authors deny that it ever is. The few cases included here do not alter the picture significantly.

TABLE II

AGE DISTRIBUTION OF CLEVELAND POPULATION FOR 1930, 1941, 1944, 1946

Year	0–4	5–9	10–14	15–19	20–44	Total
1930	68,100	80,400	85,000	83,000	395,000	900,429
1941	57,600	51,300	64,000	77,000	380,000	877,360
1944	70,700	51,200	57,600	58,000	390,000	894,840
1946	77,000	54,900	53,700	67,000	380,000	895,790

Figures based on the U. S. Census, 1930 and 1940, and on data kindly supplied by Dr. J. G. Smith of the City Bureau of Birth Registration and by Mr. G. E. Irons and Dr. D. J. Wiens of the Board of Education.

TABLE III

Year	0–4		5–9		10–14		15–19		20–44		
	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	Total
1930	69	48.3	47	32.8	19	13.3	3	2.1	5	3.5	143
1941	19	16.5	40	34.7	30	26.1	10	8.7	16	14.0	115
1944	39	37.9	32	31.1	9	8.7	8	7.8	15	14.5	103
1946	37	28.2	61	46.6	13	10.0	7	5.3	13	9.9	131

Age distribution of poliomyelitis in Cleveland for four epidemic years, exclusive of abortive cases and all those occurring before July 1st.

TABLE IV

Year	0–4		5–9		10–14		15–19		20–44		All Ages	
	Par.	Tot.	Par.	Tot.	Par.	Tot.	Par.	Tot.	Par.	Tot.	Par.	Tot.
1930	101	115	59	64	22	24	3.6	3.6	1.25	1.25	15.9	17.4
1941	32	40	80	90	46	57	12.5	15	4.2	4.5	13.1	15.3
1944	55	61	63	68	16	30	14	24	3.8	3.8	11.5	14.5
1946	48	57	111	124	24	35	10	12	3.4	4.7	14.6	17.5

Par. = Paralyzed. Tot. = Total.

Morbidity rate per 100,000 population in each of five age groups, for all cases and for paralytic cases of poliomyelitis after July 1st of four epidemic years in Cleveland.

TABLE V

Month	No. of Cases			Median Age			% Under 10 Yrs. Old		
	1941	1944	1946	1941	1944	1946	1941	1944	1946
July	24	20	33	10.0	5.0	7.5	50.0	85.0	72.7
August	68	56	55	9.3	8.7	7.5	52.9	57.2	65.5
September	36	37	43	12.0	10.8	7.5	47.7	45.9	69.8
October	2	11	22		8.0	6.0		54.5	86.4
November	3	5							
December	2	2							

Poliomyelitis in Cleveland (paralytic and non-paralytic cases occurring on or after July 1st): number of cases, median age and per cent of patients under 10 years old for each month.

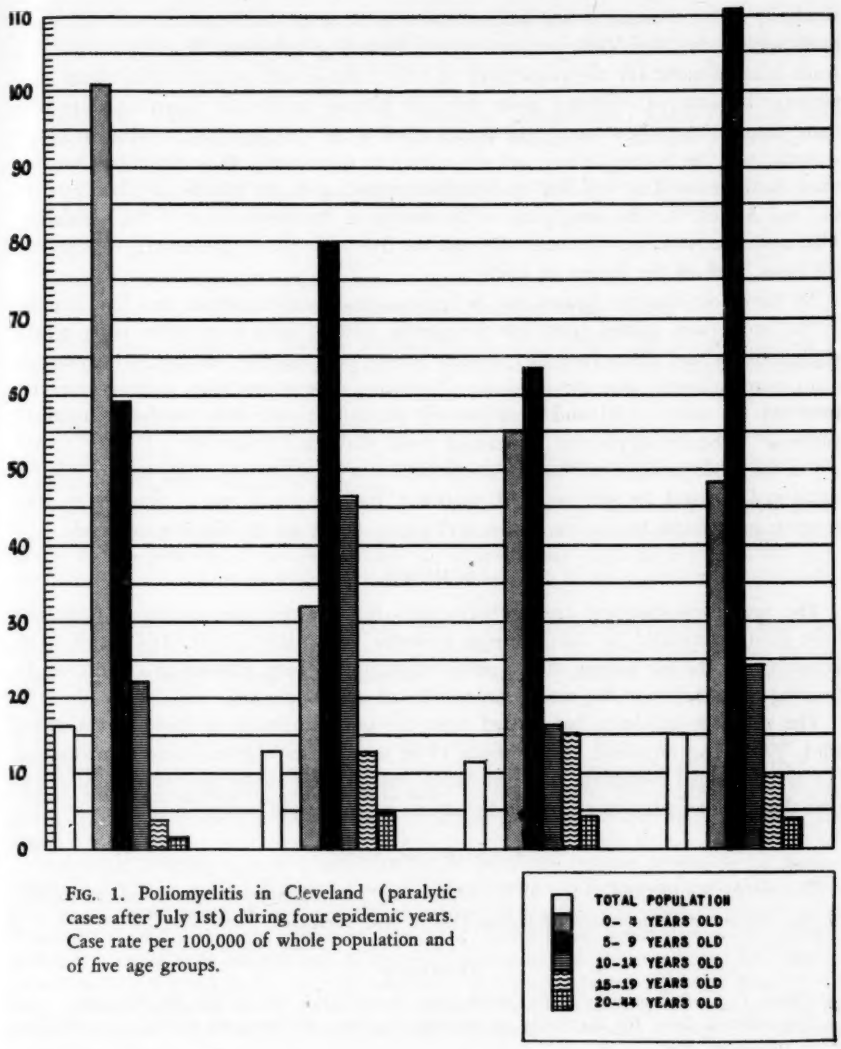

FIG. 1. Poliomyelitis in Cleveland (paralytic cases after July 1st) during four epidemic years. Case rate per 100,000 of whole population and of five age groups.

place for most of the population in the course of the first 10 or 20 years of life is suggested by the high percentage of adults with neutralizing antibodies in the blood serum.[13] Poliomyelitis has been called "an accident which occurs during the process of mass exposure";[14] this could be applied most particularly to paralysis. Obviously, for the production of paralysis a factor (or factors) is necessary in addition to those determining infection and immunization.

It is hardly permissible to speak of a definite trend on the basis of data gathered from four scattered years; and the standards used in the selection of cases impose caution in comparing the results with others heretofore reported. Yet one is struck by the

similarity of the changes in age incidence here to those reported earlier from elsewhere, particularly from New York and some of the New England states. If one plots the data from Massachusetts for the years 1912 to 1931,[2] curves are obtained of a rather convincing character; if epidemic years only are plotted (arbitrarily taken as years with more than 500 reported cases), the curves for 0-4 and 5-9 year olds become strikingly smooth, with the former falling and the latter rising gradually. It is difficult to see how these findings could be nullified by defects in reporting of the nature described by Nelson and Aycock[8] for the same state, or by changes in the composition of the population. That a similar trend has continued through the fourth decade of the century is suggested for New York by the figures of Dauer.[1]

To the extent that our figures may be supposed to describe a trend, they lend support to the impression gained from less stringently selected data from other parts of the United States and from foreign countries where poliomyelitis has been common for many years; namely, that the incidence of poliomyelitis is gradually shifting from the small to the older child and even toward the adult; and that the term "infantile paralysis" is becoming obsolete, at least in these places and countries.

On the other hand, it will not be overlooked that thus far more than half of the patients in Cleveland are still under 10 years old, that the attack rate is generally at least twice as high under ten as it is above, and that it tapers off rapidly in adulthood.

Summary

The age distribution and age morbidity rates for paralytic poliomyelitis in Cleveland have been determined for the last four epidemic years, 1930, 1941, 1944, and 1946. Distortion of the age pattern due to under-reporting has been reduced to a minimum by limiting this analysis to the second six months of epidemic years.

The peak age incidence has shifted from the 0-4 year group to the 5-9 year group since 1930. The incidence among those 15 or more years old has more than doubled but remains small compared to the incidence among those under ten. The age distribution showed no consistent change in the course of the season.

Acknowledgement

The author is indebted to Dr. T. G. Duncan for permission to use the excellent records of the Cleveland Department of Public Health and Welfare.

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SPANISH ABSTRACT

La edad en la poliomielitis en Cleveland, Ohio

Recientes informaciones de distintos paises nos inclinan a pensar que la incidencia de la poliomielitis en cuanto a la edad de los sujetos esta apareciendo en los de mayor edad. Esta afirmacion estadistica se refleja en el estudio de la poblacion en general de los distintos centros y ademas se origina principalmente en los reporters mas completos que cada año se hacen por las facilidades diagnosticas muy particularmente la inclusion de los casos no paraliticos, que hoy son tambien reconocidos en el sindrome poliomielitico; por lo tanto no es posible establecer una verdadera comparacion entre las cifras antiguas y modernas.

Examinada la incidencia de la poliomielitis en Cleveland, en una poblacion de 100 mil habitantes, se intento hacer el estudio de edades por grupos. Usando de una informacion obtenida de igual estudio en Massachusetts, el material fue reducido al estudio del origen de la poliomielitis paralitica ocurrida en Cleveland en el segundo semestre de la epidemia de los años de 1930, 1941, 1944 y 1946.

La eliminacion de los casos no paraliticos, muchos de los cuales indiscutiblemente nunca son reconocidos dando lugar a la posibilidad de falsos diagnosticos, no solamente desde el punto de vista estadistico sino tambien sirviendo para intensificar los distintos problemas relativos a la patogenia de la paralisis ocurrida solamente en una marcada minoria de las personas afectadas por el virus de la poliomielitis.

El numero de casos ocurridos durante nuestras epidemias varian entre 103 y 143. Desde 1930 la incidencia de la edad ocurrio en los grupos desde 0 a 4 años a los grupos de 5 a 9 años. No hubo ningun cambio de significacion aparente en el grupo de 10 a 14 años. Los atacados sobre 15 años fueron mas del doble pero permanecieron sin embargo, pocos comparados con la incidencia por debajo de 10.

Estas cifras permiten sostener la impresion de los promedios de otros lugares de los Estados Unidos y de ciertos paises extranjeros donde la poliomielitis ha sido frecuente por muchos años; la incidencia de la edad en la poliomielitis va ascendiendo de los niños pequeños a los mayores y aun alcanzando al adulto, de donde el termino de paralisis infantil no esta ajustandose al hecho clinico realmente en muchos de nuestros lugares y paises donde se observa estas cuestiones. Sin embargo todavia mas de la mitad de los pacientes sobre todo en Cleveland fueron sujetos de menos de 10 años, pudiendo sostenerse que la incidencia en general es aproximadamente dos veces mas alta en los sujetos de menos de 10 años, pudiendo sin embargo alcanzar rapidamente a sujetos mayores y aun a individuos adultos.

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Pediatrics

VOLUME I JANUARY 1948 NUMBER 1

AMERICAN ACADEMY OF PEDIATRICS, INC. PROCEEDINGS AND REPORTS

A MESSAGE FROM THE PRESIDENT

Today begins an epoch in the history of the Academy; for it marks the advent of the first issue of the Academy's own journal—PEDIATRICS. The journal's title is striking, as are its style and format. All of which have been given much thought and study in order to make them outstanding and meaningful.

The contents includes original articles, proceedings and reports from the Academy as well as an informative division composed of feature sections—surely enough to pique the interest of every reader.

The birth of PEDIATRICS was not precipitous, but was a result of long and diligent study by a special committee which concluded that the progress made by our organization in the past few years had been so rapid as to require a journal of its own to help record its many activities and to publish reports thereof. Also, so much is happening in the field of pediatrics that a special journal is needed mainly to coordinate the many developments suggested by the various active committees and to transmit these suggestions to the membership. We have long needed a place for reports, exposition and discussion; no longer will mimeographed bulletins satisfy.

From time to time, voluminous progress reports have been circulated from Dr. John P. Hubbard on the recent Study of Child Health Services. Here, now, is adequate and proper place for their publication. We are gratified in having been able to persuade Dr. Hubbard to direct a fact finding bureau to be called Trends in Health Legislation and Administration which bids fair to be the most practical of our moves and one that should prove to be of inestimable value as a source of information.

Our trials and tribulations, whether the result of private practice, of state medicine, or other causes may concern us for a time—but here is an open forum where problems can be decided in the American way of open discussion. If opinion and ideas can be expressed fully, we can make real progress. We need more light and less heat.

PEDIATRICS, I salute you and wish you well!

JOHN A. TOOMEY, M.D.

REPORT OF THE MEETING OF THE EXECUTIVE BOARD, WASHINGTON, D.C., JULY 7 AND 8, 1947

A meeting of the Executive Board was held at the Mayflower Hotel, Washington, D.C., on Monday and Tuesday, July 7 and 8, 1947. The first session was called to order at 10:30 A.M., Monday, July 7, by the President, Dr. Lee Forrest Hill. There were present Drs. Hill, Wall, Beaven, Stringfield, Quillian, Toomey, Barba, McElhenney, Bruce, Munns, Pease, Spickard, Hurtado, Martmer and Grulee.

The following applicants were elected to Fellowship:

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Harry Louis Mueller, 31 Church St., Winchester, Mass.
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Louis M. Nightingale, 71 Ocean Parkway, Brooklyn 18.
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Mario A. Torroella, Durango 216, Mexico, D.F.

* * *

Upon application, the following were granted Emeritus Memberships:
Elizabeth B. Ball, Springfield, Ill.
George E. Baxter, Glendora, Calif.
James Frazier Binns, Nashville.
George J. Feldstein, Pittsburgh.
J. H. Mason Knox, Jr., Baltimore.
David Wolin, Rochester, New York.

Dr. Julian P. Price's request for reinstatement was granted. He is from Florence, S.C.
The resignation of Dr. Dewet Barbato, Montevideo, Uruguay, was accepted.
Dr. Alfredo Casaubon, Buenos Aires, Argentina, was granted a leave of absence.
The appointments of the following Alternate District Chairmen were approved.

District I—Lendon P. Snedeker
District II—Harry Bakwin
District III—Harrold A. Murray
District IV—Preston A. McLendon
District V—Edward A. Wishropp
District VI—Roger L. J. Kennedy
District VII—James C. Overall
District VIII—Clifford Sweet
District IX—Federico Gomez Santos
—Victor Escardo y Anaya
—Adamastor Barboza.

The following deceased members were reported by the Secretary:
Harry Hampton Donnally, Washington, D.C. (Emeritus)
Frank H. Lamb, Pacific Palisades, Calif. (Emeritus)
D. Lesesne Smith, Spartanburg, S.C.

PRESIDENT'S REPORT TO EXECUTIVE BOARD

Since the last meeting of the Executive Board in Pittsburgh several matters have developed in the affairs of the Academy which should be brought to your attention. These items concern the Academy's journal, a letter addressed to the President from five past-presidents, the report of the Committee for the Improvement of Child Health, and the report from Dr. Mitchell on the Study of Pediatric Education. The purpose of this report is to emphasize some of the major issues involved.

At Pittsburgh it was decided definitely that the Academy would own its own journal and that a contract with Charles C Thomas, Publisher, of Springfield, Ill., for its publication should be entered into. The matter was referred to Dr. McCulloch, Dr. McQuarrie, and Dr. Martmer, the Academy's sub-committee on the journal for investigation. It was the Committee's decision that such a contract be entered into. On April 2, 1947, Dr. Veeder addressed to me a letter saying that he had decided to remain as Editor of *The Journal of Pediatrics*. Dr. Veeder's resignation was accepted because I was sure it was a matter to which he had given long and serious thought since he spoke to me in Pittsburgh about the choice he would have to make. I believe it would be fitting for the Executive Board sometime during its session here in Washington to adopt a resolution of thanks to Dr. Veeder for his long years of valuable service to the Academy as one of its Editors of *The Journal of Pediatrics*.

Shortly after Dr. Veeder's resignation was announced, several members the Editorial Board including Dr. Powers, Dr. Butler, and Dr. Aldrich, submitted resignations on the basis of giving the Academy a free hand in case reorganization of the entire editorial staff was desired. These resignations were refused and Dr. McCulloch was named Editor-in-Chief with the thought that an assistant editor would be appointed later. In order to facilitate completion of a contract with Charles C Thomas, Publisher, it was necessary to establish a Publication Committee. Dr. Lancaster, because of his legal training, was designated Chairman. The other members appointed were Drs.

McKhann and Stringfield, with Drs. McCulloch and Martmer as ex-officio members. On April 20th your President, Secretary, Assistant Secretary, Editor and Dr. McQuarrie met in Chicago to go over the contract and discuss other details pertinent to getting the Academy's journal underway. Your President also had the pleasure of attending a meeting of the Editorial Board at Stockbridge at the time of the meeting of the American Pediatric Society. Some of the problems which came up at each of these meetings will be placed before you later by Dr. McCulloch for your action. The details need not be considered further here. While the job of undertaking the ownership of its journal is by no means a simple task, nevertheless the Academy's project would seem to be launched on its way with every prospect of future success.

All of you have, I believe, received copies of the letter addressed to me from the five past-presidents, Drs. Helmholtz, Smith, Veeder, Gengenbach, and Wall. Concerning their major thesis "that one person can no longer carry the entire load of the extended Academy program if the Academy is to continue in its position of the leadership in the fields in which it is now working and if it is to explore the many possibilities for work which the survey now under way will undoubtedly open up." I believe all of us here are in complete agreement, including our Secretary-Treasurer, whom we hope has a good many years yet ahead of him in the service of the Academy. I also would agree that the work of the Academy as it is constituted at present and as it is likely to be in the future is divided into two rather distinct parts. One has to do largely with the business side of the Academy's activities. The load here has been increased greatly with the taking over of the journal and with the responsibility for running three or four meetings annually from the central office as a result of the redistricting. The other phase of the Academy's activities is the Study and the extensive program for future endeavor resulting from it. You have all seen the report of the Committee for the Improvement of Child Health. It is an excellent report, broad in its understanding of its responsibilities to the Academy and to other groups outside of the Academy. Its projected scope of activities is outlined clearly, as is the organizational set-up which is essential if the program is to be realized.

Before the recommendations of the past-presidents can be considered it seems to me necessary that the Executive Board express itself either as approving or rejecting the overall-program of the Committee for the Improvement of Child Care, for if it should be your decision that the task is too great, then there would be no further need of discussing administrative reorganization. But if it is your decision, as I trust it will be, that the objectives are in keeping with and a challenge to the Academy's potentialities for assuming national leadership in matters affecting the health of children, administrative reorganization of some type certainly merits consideration.

There are several ways in which this might be accomplished. One is the method recommended by the past-presidents for an executive vice president, a business manager and treasurer, and an elected secretary. In this plan presumably, the duties of the executive vice-president would largely be taken up with the work of the Committee on Improvement of Child Health. Or the point of view might be taken that the executive vice-president would serve in the capacity of a general manager or overseer of all the Academy's activities, in which case there would still be need for an executive secretary and staff for the Committee on Improvement of Child Health. I should like to suggest to the Executive Board that for the present at least the recommendations of the past-presidents and also of the Committee on Improvement of Child Health could satisfactorily be met by continuing the office of Secretary-Treasurer as at present and by approving the request of the Committee on Improvement of Child Health that it be empowered to employ an executive secretary. Thus the two phases of the Academy's activities referred to previously would have full time executives. I should think, too, that the Committee on Improvement of Child Health might be given the responsibility of coordinating the activities of those committees whose work overlapped its own activities.

The Committee on Improvement of Child Health in its report has asked approval of the Executive Board to employ Dr. John P. Hubbard as its Executive Secretary at a salary of $15,000 a year and to discuss ways and means by which an annual budget of $75,000 can be raised. These matters along with the rest of the Committee's report will be before you for your consideration later. I shall not discuss them here, but there is a final thought which I should like to leave with you. In taking on its greatly augmented program the Academy has cut out for itself a man's sized job. However, I believe it is no more than its members and the nation at large should expect from the largest pediatric organization in the world. For the first time its program embraces the entire field of pediatrics—from undergraduate teaching of pediatrics in our medical schools, post-graduate resident training, scientific pediatric meetings

of a high order of excellence, publication of a journal of its own, committee activity on national and local levels, to the social aspects of pediatric medicine which includes an effort to improve and increase the distribution of pediatric services and facilities. All of these combined have the worthy objective of attempting to raise the standards of child health throughout the nation. If success is to be achieved in this ambitious but sound program, full support of the Academy membership is essential. Schisms of any sort cannot be allowed to develop. I mention this because I have heard rumors that some members believe the Study group was trying to run the Academy. I don't believe it. So far as I know every move made by the Committee on Study of Child Health Services and by its Executive Staff has been submitted to and had the full approval of the Executive Board. I have heard rumors also that the Study personnel because of contact with the U. S. Public Service and the Children's Bureau has become tainted and therefore is to be regarded with distrust. I don't believe this either. The truth is, I am sure, that the Study group has done an excellent job of maintaining cordial cooperative relations with the state medical societies throughout the country as well as with governmental agencies. It must be expected and accepted that the same sort of cooperative action will have to be maintained by the continuing Committee and its executive staff with both of these groups and with others if the program in which we are launched is to succeed.

Perhaps no meeting of an Executive Board has ever been faced with more important deliberations and decisions so far as the future of the Academy is concerned, than confronts us at this session. I am sure our actions will be based upon broad-minded constructive concepts with the best interests of the Academy and of the children in America in mind.

Report was approved.

REPORT OF THE TREASURER

Statement of Receipts and Disbursements

July 1, 1946 to June 30, 1947

Balance in checking a/c—July 1, 1946	$11,187.49
Balance in savings a/c—State Bank & Trust Company	8,214.89
Balance in savings a/c—First National Bank & Trust Co.	1,560.09
	$20,962.47

Receipts:

Amount received from Regions I and III		$ 8,321.29	
Dues		43,389.63	
War-time Assessment		15.00	
Pediatrics (Journal)		5.00	
Exhibits—Feb. 1947 Meeting		5,882.50	
July 1947 Pan-American Congress		4,725.00	
Sept. 1947 Meeting		600.00	
Initiation Fees		5,050.00	
Interest Earned		768.98	
International Congress Assessment		530.00	
Pamphlets—Child Health Record	$570.62		
Im. Procedures	225.04		
Vitamins	8.50	804.16	
Research on Child Development		59.00	
Subscriptions—Men in Service		105.00	70,255.56
			$91,218.03

Disbursements:

Annual Meeting—Feb. 1947		$ 8,000.27	
Areal Meeting—Sept. 1947		86.49	
Annual Meeting—Dec. 1947		41.16	
First Pan-American Congress		1,316.09	
Bank Charge and Exchange		66.44	
Certificates		149.68	
Executive Board		4,291.62	
Miscellaneous		833.87	
Office Supplies and Equipment		754.67	
PEDIATRICS (Journal)		95.50	
Postage		1,190.93	
Rent		2,474.10	
Salaries—Secretary	$12,000.00		
Assistant Secretary	2,000.00		
Office	5,859.43	19,859.43	
Stationery and Printing		2,225.18	
Subscriptions		10,061.82	
Telephone and Telegrams		674.32	
Travel—Secretary		755.33	
Treasurers' Bonds		87.50	
Expense—Regions and Districts	$ 645.62		
States	197.69		
Committees	3,394.13	4,237.44	
Pamphlets—Child Health Record	$ 47.10		
Im. Procedures	355.75		
Vitamins	.91	403.76	$57,605.60
Balance—June 30, 1947			$33,612.43

Balance in checking a/c—June 30, 1947	11,920.07	
Balance in savings a/c—State Bank & Trust Company	13,371.07	
Balance in savings a/c—First National Bank & Trust Co.	8,321.29	
		$33,612.43

Report was approved. Action was taken to raise the Secretary and Treasurer's salary from $12,000 to $16,000 and that of the Assistant Secretary from $2,000 to $3,000.

* * *

The changes in the By-Laws as submitted to the members were approved with the addition of New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland to District I.

REPORT OF DISTRICT I

No meeting of District I has been held since its establishment. All the State Chairmen have been canvassed relative to an alternate chairman. They have recommended Dr. Robert M. Lord of Providence, R.I., and Dr. Lendon Snedeker of Boston, Mass.

As Chairman of the former Region I of the Academy, I have audited the books of Dr. Frederick Wilke, Treasurer of Region I and found them in perfect order. As instructed by the Executive Board, Dr. Wilke has forwarded the balance ($6,113.94) to Dr. Grulee. It is understood these moneys are to be kept in a special fund to assist in promoting our future Areal Meetings.

The Study of Child Health Services Program is progressing satisfactorily throughout the District.

Respectfully submitted,

OLIVER L. STRINGFIELD
District Chairman

Report was approved.

REPORT OF DISTRICT II

Dr. Harry Bakwin has been appointed Alternate Chairman of the District. During the interval since we last met we have had two meetings in New York. At those meetings not only Drs. Bakwin and Givan were present, but also Dr. Higgons of Port Chester and Dr. Weinstock of Brooklyn, as representatives of the State Society. The purpose of those meetings was to discuss the work going on, which is proceeding with some difficulty in getting in the schedules for the New York district. At the first meeting the report was that only 30 per cent of the pediatricians had reported back with schedules. In the second report it was pushed up to 75 per cent, and by now 80 per cent of the pediatricians will have answered their schedules. With the State Society working in cooperation with the Academy there is going to be, I think, a successful issue within the New York district.

Respectfully submitted,

PAUL W. BEAVEN
District Chairman

Report was approved.

REPORT OF DISTRICT III

Subsequent to the February meeting, the organization of the District was accomplished after consultation with the various State Chairmen and several of the Fellows. Dr. Margaret Handy had already sent in her resignation as State Chairman for Delaware and Dr. Robert O. Y. Warren was the choice of the Fellows in Delaware for that position. In New Jersey, Dr. Harrold A. Murray was anxious to give up the position of State Chairman because of pressure of work in many other activities. Dr. Frederic W. Lathrop, of Plainfield, N.J., has accepted the position of State Chairman and Dr. Murray has accepted the position of Alternate Chairman for District III.

In Pennsylvania, Dr. Theodore S. Wilder has accepted the position of Co-Chairman for Eastern Pennsylvania and Dr. Gilmartin has consented to carry on as Co-Chairman for Western Pennsylvania.

The A.M.A. Convention gave an opportunity for this group to meet and discuss mutual problems. We had a very pleasant and stimulating discussion which, I think, will help our future activities.

As in most Districts our activities have largely been limited to prosecution of the Study of Child Health Services. This has been completed in Delaware, almost completed in Pennsylvania, and is within a few weeks of completion in New Jersey.

In Delaware, the Academy members sponsored a combined meeting of pediatricians, obstetricians and general practitioners in an effort to clear up confusion on the Rh factor.

New Jersey has had a very active Academy group. They are affiliated closely with the State Medical Society and at present are working particularly on stimulation of two programs: 1. The Rheumatic Fever Program, and 2. The Education of Adults on Sex Hygiene. It is thought that this approach is better than group teaching of children.

This group is functioning also in other fields coordinated with the State Society.

In Pennsylvania, we are faced with the problem of a large area's having a concentration of members at each end of the State. Most of the Fellows are members of either the Philadelphia or Pittsburgh Pediatric Societies. The Academy activities, while stimulated usually by Academy members, are carried out in the name of the two Societies in those areas. Dr. Wilder has suggested recently the creation of "Pediatric Day" once a month. On such days various hospitals will hold Clinical Conferences and the regular Pediatric Society meeting will be held in the evening; thus affording a concentration of meetings for men from surrounding areas. The idea has been received favorably by the pediatric group in Philadelphia.

We are hoping the completion of the Study of Child Health Services will give both weight and direction to our efforts.

Respectfully submitted,

PHILIP S. BARBA
District Chairman

Report was approved.

REPORT OF DISTRICT IV

Since the decision of the Academy at the Pittsburgh meeting to re-district the Regions, there has been no opportunity for me to visit personally the various states comprising District IV.

The cooperation of the State Chairmen in handling routine business has been gratifying. The continued flow of applications for membership indicates sustained interest and enthusiasm on the part of the members as well as increasing respect for Academy ideals and attainments from those pediatricians who would like to become members.

There has been no regularly scheduled meeting since reorganization.

Respectfully submitted,

WARREN W. QUILLIAN
District Chairman

Report was approved.

REPORT OF DISTRICT V

Dr. Edward A. Wishropp of Grosse Pointe Farms, Michigan, was appointed Alternate Chairman for District V. I contacted all the State Chairmen shortly after my appointment and had very cordial letters back from them. There have been no meetings of any kind in District V. The Study of Child Health Services is progressing very satisfactorily in our states.

Respectfully submitted,

JAMES W. BRUCE
District Chairman

Report was approved.

REPORT OF DISTRICT VI

District VI has retained all State Chairmen in office who had previously served in that capacity when it was part of old Region III. Dr. Henry G. Poncher has asked to be relieved of the State Chairman's office in Illinois. The names of candidates for the office will be presented for consideration by the Executive Board.

All money and bonds previously held by Region III have been transferred to the account of the Academy.

Reports from individual State Chairmen are as follows:

Illinois: Dr. Henry G. Poncher reports that the Academy, working through the Illinois State Medical Society, has arranged for summer round-up health examinations through the respective counsellor districts of the State Medical Society. Dr. Poncher has also been instrumental in organizing an Extension Division of the Department of Pediatrics of the University of Illinois in two counsellor districts where satisfactory pediatric care has not been available. These have been the chief specific activities in Illinois since the last report.

Iowa: Dr. James E. Dyson reports that the State Pediatric Society has been active in holding programs in conjunction with the State Medical meetings and plans to conduct regular clinical meetings in the fall and spring of each year. The Iowa society held a banquet honoring Dr. Lee Hill's recent election to the Presidency of the Academy. All these meetings have been very well attended.

Missouri: Dr. Park J. White reports that in February 1947 the endorsement of the St. Louis Pediatric Society was obtained for the Children's Code Commission in its effort to obtain from the Legislature: (1) the establishment of a Bureau of Child Guidance in the Division of Mental Disease with one or more State Child Guidance Clinics as a beginning program; (2) enforcement of compulsory quarantine and specific authorization for the Division of Health to designate the place of quarantine; (3) compulsory blood tests for pregnant women in order to prevent congenital syphilis in babies; (4) compulsory immunization of children against diphtheria and small pox prior to admission to school; and (5) the enactment of the Uniform Vital Statistics Act.

Dr. Dwyer and the Western Missouri members were active also in this work, as his reports should mention. The first four measures are still in committee. The vital statistics act has been passed.

We in St. Louis, at the suggestion of Dr. Grulee, presented to the Mayor and to the Director of Personnel the resolution passed by the State Chairmen at Pittsburgh urging increase in the salaries of public health personnel.

It is worth re-emphasizing that pediatricians giving best cooperation in the Academy Study were those who had joined the Academy.

North Dakota: Dr. Ralph E. Dyson reports no specific Academy activities except the work on the pediatric study.

South Dakota: Dr. Goldie E. Zimmerman reports no specific new Academy activities except the work on the pediatric study.

Wisconsin: Dr. H. Kent Tenney, Jr., reports that Academy members in Wisconsin have been instrumental in starting a program for the care of cerebral palsy patients. They have sent one of their young graduates to Baltimore for special orthopedic training. Upon his return he will conduct an out-patient service for these patients.

Respectfully submitted,

GEORGE F. MUNNS
District Chairman

Report was approved.

REPORT OF DISTRICT VII

The Study of Child Health Services has been going on in our states without interruption. We have tried to do rather extensive work in child health, cooperating with the American Legion and with other organizations with similar purposes. We have formed committees in almost all our states, with district chairmen in charge. All of these men are not pediatricians, but they are interested in the Study and in pediatrics. It seems to me it would be well to keep them as a permanent organization throughout this work. We want to focus special attention toward : (1) work with crippled children (in which Dr. Lamar has been interested); (2) poliomyelitis patients, and (3) rheumatic fever victims. Heretofore work done along these lines has been done by individuals rather than as district-wide projects.

Respectfully submitted,

THOMAS J. MCELHENNEY
District Chairman

Report was approved.

REPORT OF DISTRICT VIII

District VIII is cooperating in trying to make the Areal Meeting in Salt Lake City, September 8, 9 and 10, a success.

Dr. John A. Anderson, State Chairman, and Professor of Pediatrics at the University of Utah Medical School, has prepared a program that should be of interest to any of the men who may be able to come to Salt Lake City. The meeting is to be held at a very favorable time of year. For members attending there are many nearby scenic spots of interest.

I have had a great many letters from members in District VIII objecting to the column on Social Aspects of Medicine as it appears in *The Journal of Pediatrics*—particularly the article by Dr. Ernest P. Boas, which appeared in the April number.

A statement by Joseph Palma, Chairman for Hawaii, seems to embody the sentiment regarding this type of discussion as far as our western members are concerned. We hope the Editorial Board for the new publication PEDIATRICS will consider this matter.

Respectfully submitted,

VERNON W. SPICKARD
District Chairman

Report was approved.

REPORT OF THE COMMITTEE ON CONTACT INFECTIONS

The Committee on Contact Infections is in the process of being formed. Preliminary steps have already been taken toward the development of a cooperative tuberculosis program with the Committee on Tuberculosis of the American School Health Association.

Correspondence is in progress with Dr. J. A. Meyers of Minneapolis and it is hoped that an active

program will be developed by fall. A letter was written to Dr. Eugene L. Opie, April 7, 1947 requesting his opinion regarding the present status of B.C.G. Vaccine, as a possible subject to be discussed by our Committee but no answer has been received to date from Dr. Opie.

The question of contact respiratory disease infections in children's institutions was discussed by Dr. Park J. White and your Chairman, and it was felt that it would be impossible with our facilities to obtain accurate information on this subject on a national scope.

Respectfully submitted,

REGINALD A. HIGGONS, *Chairman*

Report was accepted.

REPORT OF COMMITTEE ON COOPERATION WITH THE AMERICAN LEGION

During the past year the Committee on Cooperation with the American Legion has been reorganized in accordance with the new districting of the Academy. Instead of the previous arrangement of having five Regional Liaison Officers from the Academy, there is now to be a group of eight District Liaison Officers. With the exception of New York State (District II), appointments have been made. The new District Liaison Officers are:

District I	David H. Clement, New Haven, Conn.
District III	W. W. Briant, Jr., Pittsburgh, Pa.
District IV	D. Lesesne Smith, Jr., Spartanburg, S.C.
District V	Byron K. Rust, Indianapolis, Ind.
District VI	James B. Gillespie, Urbana, Ill.
District VII	W. Price Killingsworth, Port Arthur, Tex.
District VIII	Clement J. Molony, Beverly Hills, Calif.

Following the rule that has been adhered to in the reorganization of the Committee on Cooperation with the American Legion, the new appointees are members of the Academy who are veterans of World War II. This policy has been followed because, at present, approximately 50% of the children of the country are sons and daughters of veterans of World War II. It is estimated that within ten year 75% of the children will be in such a category.

The new District Liaison Officers are now engaged in arranging with State Chairmen of the states in their districts to appoint State Liaison Officers, whose function it will be to see that as many American Legion Posts in the state as possible have a pediatrician, or other physician interested in child health, on Post Child Welfare Committee. These physicians acting at the post level can be powerful instruments for stimulating worthwhile child health activities, and should be a real value in an advisory capacity.

It is hoped that complete reorganization down to the local Post level may be completed prior to January 1, 1948, so that the pediatricians of the country may exercise as favorable an influence as possible in the coming campaign against rheumatic heart disease. In this connection, it is well to remember that the American Legion and the American Legion Auxiliary gave $50,000.00 as an initial gift to help combat the ravages of heart disease. With a membership of several million, and with about 16,000 Posts through the country, the American Legion is undoubtedly the most powerful lay organization through which to work in the raising of funds for the fight against crippling heart disease.

At a recent meeting in Washington of the Medical Advisory Committee of the American Legion, headed by Dr. Leonard G. Rowntree, your Chairman suggested that no American Legion Post in the country be granted authority to start a local rheumatic fever program without first submitting the plan to the Council for Rheumatic Fever, of which the Academy is a member. This was suggested so that an opportunity might be offered the Council on Rheumatic Fever to exercise some control, at least in an advisory capacity, over the many rheumatic fever programs springing up about the country. Dr. William D. Stroud was among those in favor of this suggestion, and the Medical Advisory Committee passed the motion, which is being forwarded to American Legion national authorities. There is a danger of ill-advised and scientifically unsound programs being started by Posts which may not have availed themselves of proper medical advice locally.

As an example of the role the Academy is playing in its advisory capacity to the American Legion National Child Welfare Division, a communication has been received requesting advice and informa-

tion concerning operations for congenital cardiac defects. Some of the local Posts in the country have raised funds to have such operations performed on children of veterans who were unable to finance the operation themselves. The Child Welfare Division wants to know where such cases can best be referred throughout the country, and what financial arrangements might be made with medical centers where such surgery is being performed. Letters are now being sent to Boston, Baltimore, Chicago, and elsewhere by your Chairman, requesting guidance as to what advice to give the Legion.

During the past few months a series of articles on various aspects of child health, written by prominent physicians of the country, has been collected for publication in the National Legionnaire, the paper which goes into several million homes each month. The list of articles already in hand follows. The first two articles have already been published.

"100 per cent Americans" by Dr. Edward Clay Mitchell, "Poliomyelitis" by Dr. Hart E. Van Riper, "Management of Infant During the First Three Months of Life" by Dr. Isaac A. Abt, "Does Your Child Have a Positive Tuberculin Test?" by Dr. Lee Forrest Hill, "An Immunization Program for Children" by Dr. John A. Toomey, "Juvenile Delinquency" by Dr. Bert I. Beverly and "Dental Care for Your Child" by Dr. George Teuscher.

Unfortunately, a shortage of newsprint has forced the condensation of these articles to a much shorter space than that provided by the original agreement. However, it is felt that many persons will benefit by the sound advice given in these articles written for the laity.

If all members of the Academy who are asked to serve in this liaison work with the American Legion grasp the very real opportunities involved and work hard, the cause of child health throughout the nation can be advanced greatly. This is especially true of those members who will be asked to serve with the local Posts. The American Legion Child Welfare Division seeks and welcomes the advice of the Academy. If we can match its eagerness to improve the health of the children of the nation, and temper the enthusiasm of local Posts with proper medical advice as to the soundness of their programs, the Academy can play an even more significant role than it already has in the health of the children of our country.

Respectfully submitted,

JAMES G. HUGHES, *Chairman*

Report was accepted.

* * *

The Secretary reported that the Committee on Cooperation with Non-Medical Groups have an entirely new Committee with Dr. James C. Overall as Chairman and they are in process of organizing.

REPORT OF THE COMMITTEE ON GOVERNMENTAL AND MEDICAL AGENCIES

The Committee held a meeting at Pittsburgh in February, 1947.

The Chairman read three personal recommendations, which had been presented to the Executive Board the day before the Committee meeting, on (1) an American Academy of Pediatrics National Child Health Conference, (2) standards of quality in pediatric medical care and child health services, and (3) the problem of pediatric medical care in low income groups. These recommendations had been referred to the new Committee for the Improvement of Child Health for study and recommendation. Our Committee approved the recommendations and passed a motion expressing the willingness of our Committee to serve Dr. Wilson's Committee, the Executive Board, or any Academy group in making progress on these important subjects. The Chairman also reported that he had conferred with Dr. Wilson as to the Committee's 1947 program, particularly as to the postwar reactivation of our State Committees and State Programs by the conversion of the present State Study of Child Health Services Committees into being our State Committees at the completion of their final reports, as suggested by Dr. Hubbard. Dr. Wilson approved this plan and stated that he would present the matter to his Committee for adoption.

While waiting for Dr. Wilson's Committee to take action on these important matters, the Committee will hold a "collection of constructive ideas" meeting at he Haddon Hall Hotel in Atlantic City on June 11th, 1947 from 4:30 to 6:30 P.M. To this meeting have been invited the members of our Conference Committee from the American Medical Association, the United States Public Health Service and the Children's Bureau. Each group will be given a half hour for three-minute presentations by the Presidents, Secretaries, and other outstanding thinkers from these organizations.

Question One, Two, and Three. How can the actual working relationship of governmental and medical agencies in the United States for better child health be improved at (1) community or county levels, (2) state levels, and (3) national levels?

Question Four. How can standards of quality for good medical care for all United States children be created?

The ideas contributed will be collected, compiled and presented to the Executive Board, Dr. Wilson's Committee, and other Committees who are interested in these vital questions. If they are thought worthwhile, they will be offered for publication in our Journal.

The Committee has been further strengthened by the appointment of Dr. Hart E. Van Riper, Dr. Jessie Bierman, and Dr. Frank Van Schoick, who have had extensive experience in the subject covered by our Committee.

Respectfully submitted,

STANLEY H. NICHOLS, *Chairman*

Report was accepted.

SUPPLEMENTARY REPORT OF THE COMMITTEE ON GOVERNMENTAL AND MEDICAL AGENCIES

As stated in the formal report, our Committee held a meeting at Atlantic City of our Conference Group (representatives from the American Medical Association, United States Public Health Service, the Children's Bureau, and the Academy) to collect constructive ideas on cooperation for presentation to Dr. Wilson's Committee and the Executive Board.

Attending from the U. S. Public Health Service: Dr. John W. Mountain, Assistant Surgeon General, in charge of States Relations Programs; and Dr. Draper,

Children's Bureau: Dr. A. Leonard Van Horn,

Federal Security Agency: Miss Mary S. Switzer, representing Administrator Watson B. Miller, whose interesting letter is enclosed for examination by the Board,

American Medical Association and Medical Society of New Jersey: Mrs. Virginia Shuler, representing Council on Medical Service, A.M.A.; Dr. Henry Vaughan, Professor, Public Health, University of Michigan; Dr. Aldrich Crowe, Second Vice-President, Medical Society of New Jersey; Dr. Sigurd Johnsen, Past Chairman, Welfare Committee, Medical Society of New Jersey; Dr. Byron Blaisdell, President, New Jersey Health and Sanitary Association; Dr. Samuel Blaugrund, Chairman, Public Health Committee, Medical Society of New Jersey; Dr. Julius Levy, Chief, Bureau of Maternal and Child Health, State Department of Health, New Jersey,

American Academy of Pediatrics: Dr. Clifford G. Grulee, Dr. John McK. Mitchell, Dr. Harry A. Ong (representing Dr. Wall), Dr. George M. Wheatley, Dr. Harrold A. Murray, Dr. Stanley Nichols, Dr. John P. Hubbard.

Many constructive ideas were presented by all present, which will be compiled and forwarded to Dr. Wilson's Committee and the Executive Board for consideration. The outstanding recommendation made by virtually all speakers from all four agencies was that the Academy should continue this round table discussion of cooperative effort between our Academy and the American Medical Association, the Children's Bureau and the U. S. Public Health Service, with full time personnel as the logical follow-up of the Academy's Study of Child Health Services. This hearty endorsement of our Academy's present and future program for the improvement of child health by these cooperating agencies is most gratifying to all of us who have worked since 1935 for this type of joint action at national and state levels for better child health in America.

Respectfully submitted,

STANLEY H. NICHOLS, *Chairman*

REPORT OF THE COMMITTEE ON SCHOOL HEALTH

Although it may be premature to consider the needs for the extension and improvement of school health programs in advance of the report of the Study of Child Health Services, it is quite obvious that no federal agency is equipped with appropriate personnel to render advice and leadership, to make surveys, to develop research nor studies of procedures, to assist in demonstrations and the extension of opportunities for staff training in the field of school health. Also, it seems clear that certain rural areas and areas suffering from severe economic distress are unable without assistance to finance satisfactory preventive, diagnostic and treatment facilities for children, according to

"Medicine in the Changing Order," report of the New York Academy of Medicine, Committee on Medicine and the Changing Order, N.Y.

In the opinion of this Committee both from the standpoint of the extension of school health programs to areas where there is little or no service and for the improvement of school health elsewhere, a federal agency is needed to assist the state and local communities on request and to make available such facts and experience as would direct attention to sound and improved procedures and assist where there is need through grants-in-aid to the states and through them to the local communities. Such assistance should, of course, be integrated with plans for the extension, distribution and improvement of medical care.

While several proposals have been made for federal legislation designed to meet this need, the National School Health Service Bills (S. 1290 and H.R. 1980) have been given special study by this Committee because of the prospect of an early hearing and because many features of the bill are aimed at problems considered by this Committee. This bill has been actively promoted by Mr. George J. Hecht, publisher of Parents' Magazine, as Chairman of a National Committee working for the enactment of the National School Health Services Act.

The American Association for Health, Physical Education and Recreation, a Department of the National Education Association passed at its annual meeting at Seattle in April the following resolution: "We disapprove of H. R. 1980 (known as the School Health Services Act), (Hecht Bill), and do not endorse its passage by Congress."

"The Proposed School Health and Physical Education Act," that has been through many revisions in an attempt to achieve a form that would meet the approval of the United States Office of Education, the United States Public Health Service and the United States Children's Bureau, has not yet been introduced. The latter proposed Act has aimed to coordinate health education and physical education with the health examination, follow-up and medical guidance. The question of whether or not medical care would be included in this Act has remained an open question, although it was generally agreed the treatment facilities would necessarily be quite limited and would not in any sense encroach very far upon the large problem of medical care for school age children. They have aimed particularly at such legislation as would insure joint planning at the state level by both the Education and Health Departments for decisions as to who was to do what and how. Such planning so as to avoid the usual conflict over jurisdiction and control seems essential in view of the intrenched interests where the control is now wholly in one department or the other.

S. 1290 and H.R. 1980 provide for the matter of jurisdiction by stating that the states will determine the program, and claim that the bill provides "the same general pattern of Federal-State cooperation that has worked so successfully in improving maternal and child health services, services for crippled children," etc. But, in the opinion of your Committee this has not been notably successful in developing joint planning by the Education and Health Departments together. In the words of the bill Sec. 6 (a) "A state plan for school health services must (1) provide for financial participation by the State; (2) provide for the administration or the supervision of the administration of the plan by either the state health agency or the state education agency, or jointly by these two state agencies, as the laws of the State shall provide (or, in the absence of provision in the State law, as the Governor shall determine) for the administration of school health services as defined in Section 3.

The bill adds one further clause:—"(3) show that it is concurred in by both the state health agency and the state education agency." This is a desirable provision but if it means that the agency which receives the funds merely sets up their own rules and regulations for administration and does not plan jointly with the other agency as to who is to do what and how, then the essential cooperation needed to develop a well rounded program will not be achieved. Furthermore Section 9 (a), provides an exception to the administration through the Children's Bureau (line 25, page 10) "except that he shall utilize the services of the Office of Education in matters involving State education agencies and in matters pertaining to the training and supervision of school personnel."

In our opinion this bill does not provide adequately for joint planning between the two State agencies, and neither the State nor the local education agency should carry the responsibility for medical care and treatment services because such services are outside the professional sphere of the educational administrator. To meet the needs of handicapped and medically neglected children the primary problem is to make the fullest possible use of medical facilities of the whole community. To provide for the whole child, both the professions of medicine and education should contribute through joint planning. From the standpoint of prevention, diagnosis, guidance and to some extent

for treatment such problems as communicable disease, tuberculosis, rheumatic fever, cerebral palsy, orthopedic and other handicaps, dental disease and defects, nutritional deficiency, epilepsy, mental hygiene, ophthalmological and otological problems as well as many others in the field of pediatrics are already being developed more or less as part of the health department program in one place or another. The future development of medical services to meet the needs of all children will very naturally be a joint effort of the health department and the medical profession through such plans for the extension and improvement of medical care as may be developed. Exclusively education department control with only health department approval rather than joint planning (as might well result from the grants-in-aid for treatment as implied in this bill) would certainly interfere with the development of medical services and with making them fully available for all children in need.

While this bill refers to "especially in rural areas and in areas suffering from severe economic distress" (Section 3 line 17) and specifies: "shall utilize and develop, insofar as feasible, the qualified public health, medical, dental and hospital facilities already established in each community" (Section 2, lines 8-11, page 2), there is not sufficient safeguard against an over-emphasis upon medical care and treatment to the exclusion of the educational, case finding, medical guidance and follow-up service that is generally recognized as properly characterizing school health service. Since the bill so definitely provides for treatment and "correction of defects and conditions likely to interfere with the normal growth and development and educational progress of children," more definite safe-guards are needed to insure that the funds are not used up in a treatment and medical care program. Experience has shown that treatment services offered through government funds without any restrictions leads to such policies of emphasis upon treatment as to interefere with the development of the preventive, education, follow-up, and guidance aspect of the program so that little progress is made toward teaching people to do things for themselves. When the demand for treatment outruns the demand for prevention, education, and guidance in the use of the facilities available to those who are able to obtain medical care for themselves, the preventive and educational part of the program has little chance of development.

As the wording of the bill provides such wide powers of control by the federal authority over the state agency, and the right of appeal is not sufficiently specific, further safe-guards are recommended so that there may be no question about local autonomy in administration and policy; so that discretion and direct administration may be in the hands of the state and local offices. This is essential to permit wide local experimentation, the development of initiative, new policies and procedures and improved methods. The widespread variety of conditions in the United States make it essential that the federal control of policy shall be general but not so unlimited as in Section 6 (a) (4) i.e. "provide such methods of administration . . . as are necessary for the proper and efficient operation of the plan" and in Section 9 (b). While we would limit the power of the federal authority, this should not interfere with education, leadership in developing standards and interpretation of sound methods of procedure and policy by the federal agency.

In the Proposed School Health and Physical Education Act, Section 2 (b), is a paragraph designed to limit federal direction and control over school policies. This paragraph is suggested as a provision that might also apply to State and local health departments, public health, medical, dental, and nursing agencies and to medical and dental diagnosis and treatment. This paragraph is as follows:

> "(b) no department, agency, officer, or employee of the United States shall exercise any direction, supervision, or control over, or prescribe any requirements with respect to any school or school system, or any State educational institution or agency, with respect to which any funds have been or may be made available or expended pursuant to this Act, nor shall any term or condition of any agreement or any other action taken under this Act whether by agreement or otherwise, relating to any appropriation made under this Act or on behalf of any school or school system, or any State educational institution or agency, or any limitation or provision in any appropriation made pursuant to this Act, seek to control in any manner, or prescribe requirements with respect to, or authorize any department, agency, officer, or employee of the United States to direct, supervise, or control in any manner, or prescribe any requirements with respect to, the administration, the personnel, the curriculum, the instruction, the methods of instruction, or the materials of instruction."

An exception might be added that this provision shall not interfere with requiring that the moneys shall be used for the purposes prescribed in this Act and for the extension and improvement of their programs of school health, and shall not interfere with the requirements of Section 6 for

approval of State plans, nor shall it interfere with the federal agency making surveys and studies to reveal conditions and to publicly state their findings and recommendations.

Regarding the right of appeal (Section 8 page 10) we find that the Federal Security Administrator may stop "further payments," . . . "until he is satisfied that there is no longer any such failure to comply." The only reference to appeal is "after reasonable notice and opportunity for hearing," which implies that the Federal Security Administrator will conduct the hearing. We recommend more specific and adequate safe-guards of the right of appeal, and suggest some such provision as appeal to the United States Court of Appeals as provided in S. 545, if the Administrator should make arbitrary or unreasonable decisions concerning compliance with the provisions required by Section 6.

Respectfully submitted,

HAROLD H. MITCHELL, *Chairman*

Report was accepted. The Chairman of the Committee was authorized to be the representative of the Academy at hearings in Congress.

REPORT OF THE COMMITTEE ON FETUS AND NEWBORN

The Committee appreciates the comments and encouragement of the various members of the Executive Board. Your Committee interprets them as approving our desire to undertake an active program to develop and improve facilities for the care of the newborn infants—with special reference to prematurely born infants—which will include medical, nursing and hospital care, medical social services and the need for the training of personnel.

We will submit the various phases of our program as they develop to the officers and Executive Board of the Academy. Your Committee appreciates that the officers and Executive Board may wish to clear parts of our program through the Committee for the Improvement of Child Health before granting their approval at the national level.

We would like your approval at this time of a proposed plan of organization. We realize it is important to work out a national program on paper but nothing has been accomplished until the program is activated at the local level. We, therefore, submit the following plan of organization: National Committee on Fetus and Newborn; District Committee on Fetus and Newborn; and State Committee on Fetus and Newborn.

We recommend that the Executive Board request each District Chairman to contact his State Chairmen asking each to appoint a State Committee on Fetus and Newborn and designate its chairman. The District Chairman will submit this information to the Academy Secretary who will in turn inform the chairman of your Committee on Fetus and Newborn.

The purpose and make up of each state committee will be published in the official Journal of the Academy.

Through a bulletin each State Chairman will receive suggestions as to organization within his state. Each State Committee will petition the Council of the State Medical Society for support and cooperation. The Council of the State Medical Society will be requested to appoint a State Committee on Fetus and Newborn. This committee may well be the same committee as that appointed by the Academy, or it may serve jointly with the Academy Committee. The Council of the State Medical Society will be requested to recommend that each district medical society within the state appoint a district committee on Fetus and Newborn. Interested members of the Academy would be urged for membership on these local committees.

Respectfully submitted,

STEWART H. CLIFFORD, *Chairman*

Report was accepted. The Secretary was instructed to write to the Chairman of this Committee and suggest that the State committees be appointed through the agency of their State Chairmen.

REPORT OF THE PUBLICATION COMMITTEE

Present: Drs. Lancaster, McKhann, Stringfield, Martmer and McCulloch.

The following matters were discussed and recommendations made as follows:

The contract with Charles C Thomas, Publisher, Bannerstone House, Springfield, Illinois, lists the

subscription price for the new journal, PEDIATRICS, as "$5.00 per annum." In the past the subscription rate for *The Journal of Pediatrics* as published by the C. V. Mosby Company was $5.00 per annum but involved a deficit which was absorbed by the C. V. Mosby Company. The Committee recommends that the subscription price for the new journal be $10.00 per annum and so stated to the membership. Any profit above the expense of publication would accrue to PEDIATRICS as a profit and in turn to the general fund of the Academy.

The reaction of the members of the Academy and of the C. V. Mosby Company to this price, since the C. V. Mosby Company will continue to publish their journal at the previous rate of $8.50, was discussed and it was agreed that this was an additional challenge to our Editorial Board to publish a high-class journal that will justify the subscription rate of $10.00.

The impression prevailed among the Committee that many of the members of the Academy are not thoroughly familiar with the change of publication. It is recommended that the Committee be given a definite opportunity on the programs at coming meetings to present to the membership the reasons for and the details of the change. This can be done at luncheons or in the general meeting and questions answered at such time. Also that Charles C Thomas, Publisher, Bannerstone House, be given a booth at both areal and national meetings to further interest in, and to receive subscriptions to PEDIATRICS until such knowledge is general. Further, that the State Chairmen be requested to canvass the hospitals, local societies, libraries, etc., of their state in regard to subscriptions to PEDIATRICS and assist Charles C Thomas, Publisher, Bannerstone House, whenever possible in enlarging the subscription list to PEDIATRICS.

In the matter of journal expenses, the budget, as set up by Charles C Thomas, Publisher, Bannerstone House, and the Editorial Board, and approved by this Committee and the Executive Board, will operate with the understanding that bills carrying a discount will be paid in cash promptly in order to obtain such discounts. Charles C Thomas, Publisher, Bannerstone House, shall submit bills monthly to the Publication Committee for authorization of payment and three times a year a résumé of expenditures, as provided in the contract, shall be made.

Plans for the reading of manuscripts for corrections, checking of references, and for proof reading, etc., as submitted by Dr. McCulloch, were reviewed. The Publication Committee recommends the employment of an editorial executive secretary to be trained by Dr. McCulloch for this purpose. It is felt that greater efficiency will be possible under this plan.

At the present time the Academy sends to all members a mimeographed copy of the various committee and official reports. These have been published in *The Journal of Pediatrics* in their original form and at a later time republished as revised. The Publication Committee feels that this entails unnecessary expense in publication and recommends that such reports be published once only in PEDIATRICS after being revised and acted on by the Executive Board of the Academy.

Since the round table discussions will furnish one of the most interesting features of PEDIATRICS, the Publication Committee recommends that provision be made for properly transcribing these discussions for submission to the Editorial Board for publication.

The Publication Committee further recommends that the Editorial Board be privileged to have a summary or the conclusions of each original article printed in Spanish so that PEDIATRICS may serve a better purpose in Latin-American countries; that the Executive Board authorize at least one annual meeting of the Publication Committee, preferably to follow that of the Editorial Board so as to consider the recommendations of the Editorial Board and the budget for the ensuing year.

Respectfully submitted,

FRANK H. LANCASTER, *Chairman*

Report was approved. The Secretary was authorized to sign the contract with Charles C Thomas, Publisher.

REPORT OF THE COMMITTEE ON HOSPITALS AND DISPENSARIES

Most of the activities of this Committee are in such a state of fluidity that a report rendered at this time must concern itself mainly with a recital of what is proposed, rather than what has been accomplished.

1. Comments to the Director of the Department of Education and Research of the American Institute of architects:

In response to a request from Mr. Walter A. Taylor, Director of the above organization, comments regarding certain features of hospital planning were submitted to him. These were concerned in the main with details in the planning and construction of nurseries for the newborn. Suggestions made were in line with standards recommended by the United States Public Health Service Standard Plans with some minor changes and additions.

In view of the fact that there was not time to consult members of our committee prior to a deadline set by Mr. Taylor, he was requested not to publish these suggestions at that time. The committee has been canvassed for its views and the material will probably be reworked and published in a subsequent Bulletin of the American Institute of Architects devoted to Hospital Buildings.

2. Washington Meeting:

Organizations interested in long-range plans for hospitals held a meeting in Washington on May 12. This meeting was attended by representatives of the American Medical Association, the United States Public Health Service, the Children's Bureau, the Study of Child Health Services and by Dr. Montgomery Blair for our committee. This meeting consisted chiefly of a general discussion regarding participation of the American Medical Association and the Academy in plans for hospital construction under the Hill-Burton Act.

3. Standards for Nurseries, Contagious Disease and Pediatric Units:

Standards for the above units, as set forth in Title 42—Public Health, Chapter 1—Public Health Service, Federal Security Agency, have been forwarded to *The Journal of Pediatrics* for publication in an early issue. This will be accompanied by a request that suggestions and criticisms be sent to our committee by all interested physicians.

4. Recommendations of Committee Regarding Standards:

Our committee is being polled regarding standards for nurseries, contagious disease and pediatric units in hospitals. Our recommendations will be forwarded to the United States Public Health Service Advisory Committee on Standards for Hospital Construction in time for use at a meeting of said committee to be held in Washington on June 30. It is hoped that our Committee may be invited to send a representative to the above meeting.

A copy of these recommendations will be forwarded to the Executive Board of the Academy.

Respectfully submitted,

JOHN MCK. MITCHELL, *Chairman*

Report was accepted.

REPORT OF THE COMMITTEE ON IMMUNIZATION AND THERAPEUTIC PROCEDURES FOR ACUTE INFECTIOUS DISEASES

In answer to many questions from members of the Academy, a note has been compiled upon the question of quarantine and isolation.

Doubtless, all may not agree with the opinion of the Committee for various reasons, local prejudice, etc., but the conclusions expressed are based on the latest scientific evidence available.

There is no good reason why the personnel of a general hospital should be thrown into a state of panic when one of its patients is found to be suffering from a common contagious disease. This is often the case, and a demand for immediate removal of the patient to a public contagious disease hospital is customarily made. This attitude is inconsistent since other patients with diseases equally contagious (pneumonia, tonsillitis, streptococcic sore throat, various skin infections, suppurative conditions, etc.) are being treated in wards with other miscellaneous disorders without any isolation whatever.

It is unfortunate that there are no uniform rules governing the control of common contagious diseases and restrictions are often instituted in a community without any scientific basis to support them. All patients with ordinary contagious diseases except measles, chickenpox, and smallpox can be adequately cared for in any general hospital which practices aseptic technique. Where there are no susceptible contacts in the house, patients don't even need to go to a hospital and can be cared for at home. The day of large contagious diseases hospitals, maintained at public expense, has passed. What is now needed is better training of medical personnel in aseptic technique in each and every hospital.

The restriction which surround funerals should be lifted. There is no reason why a home or

church funeral should not be held if the body is contained in a closed casket. The only diseases for which there should be a private funeral are smallpox, plague and for the victims of some new virulent epidemic disease.

The opinion of the Committee on Therapeutic Procedures for Acute Infectious Diseases and on Biologicals of the American Academy of Pediatrics on Quarantine and Isolation has been printed in full, and copies have been mailed to each member of the Academy. The Committee assumes that proper disinfection and up-to-date medical aseptic measures are practiced. Cross infections are bound to occur if such is not the case.

References to the general management of susceptible contacts, including immunization procedures, have been omitted because these subjects have previously received the attention of the Committee.

The Administrator of a hospital must decide what is most economic for his particular situation. If he decides to admit contagious cases to a general hospital, then all patients admitted, whether contagious or not, must be handled with aseptic technic. This may be found more expensive than if contagious cases were isolated in separate quarters and aseptic technique practiced only in those places. Where the demand for beds for contagious diseases is great, it may be less expensive to isolate these patients away from the other patients. Where the hospital is small, sporadic cases can be isolated separately with strict aseptic technique. Where this procedure is adopted, it requires nursing services, the cost of which may become burdensome to the patients' relatives—hence, it is practical to isolate the occasional patient at home, unless he absolutely needs hospital attention.

Respectfully submitted,

JOHN A. TOOMEY, *Chairman*

Report was accepted with corrections. It was directed that the report on quarantine measures be included as a supplement in the Red Book.

* * *

The Chairman of the Committee on Legislation reported there are two bills pending in Congress: the Taft bill and the Wagner-Murray-Dingell bill.

REPORT OF THE COMMITTEE ON MEDICAL EDUCATION

This Committee appears to have no function until the Study is completed. At that time, it is assumed that one of two things would have to happen, either this Committee would disband and allow the committee in charge of the survey to take over, or one man would be delegated to do the job. It would be ideal to have that done by the man that presumably would know most about it since he is directing it, and that would be Dr. James L. Wilson.

Respectfully submitted,

J. A. JOHNSTON, *Chairman*

Report was accepted.

REPORT OF THE COMMITTEE ON MENTAL HEALTH

The Pet Milk Company has extended to the Academy every courtesy and consideration in the production of our moving picture on mental health. They have furnished over $50,000 and the cost of the distribution of the picture will be an added expense. They allowed the Committee on Mental Health complete control over the content of the picture and its production, even tolerating a $7,000 loss in experimental scenario writing. The company has taken the same attitude as any organization that gives money for scientific research and public education.

A business concern has to show some return on money invested. The only return from a project like ours, and much of the other scientific research, is good will. Unless this is produced, we cannot expect further grants of large sums of money from the Pet Milk Company or any other company. In this situation, we will have to depend upon government support for projects of this kind, an arrangement which I am sure you all agree is not desirable.

It has been the accepted practice for a long time to give an organization credit for grants for scientific and educational projects. As far as I know neither the profession nor the public question

the propriety of this procedure, or question the scientific accuracy of the work because this credit is given.

Therefore, I strongly advocate approval of the request to give the Pet Milk Company credit for supplying the funds for the motion picture.

Respectfully submitted,

BERT I. BEVERLY, *Chairman*

Report was accepted.

REPORT OF THE COMMITTEE ON PAN-AMERICAN SCHOLARSHIPS

The Committee on Pan-American Scholarships received in the last six months regulations for intern physicians at the Hospital Infantil in Mexico City.

Dr. Jack Greig, University of California and University of Rochester Medical School graduate who served an internship at the Children's Hospital at the University of Minnesota, has been appointed to serve at the Hospital Infantil for a term beginning August 1.

Respectfully submitted,

HENRY F. HELMHOLZ, *Chairman*

Reported was accepted.

* * *

The report of the Program Committee was discussed and accepted.

REPORT OF THE COMMITTEE ON GEOGRAPHICAL DISTRIBUTION OF PEDIATRICIANS

The Committee has been diligently at work preparing surveys for the many men who have written for assistance in finding locations for their pediatric practice.

Some of these surveys have been very extensive: one includes the entire eastern seaboard, and others the middle western and west coast states, as well as the southern states.

It is gratifying to know that these surveys are serving a purpose. The letters I receive indicate as much.

When the new directories are available, I will then be able to bring my work up to date. The surveys so far have indicated that there has been little change in the pediatric status except in metropolitan areas and in university medical centers.

Respectfully submitted,

OTTO L. GOEHLE, *Chairman*

Report was accepted.

REPORT OF THE COMMITTEE ON MOTHERS' MILK BUREAUS

This committee met under the chairmanship of Dr. Julius Hess at the time of the Pittsburgh meeting last February. Discussion of the status of Mothers' Milk Bureaus promptly entered the larger field of the present status of maternal breast nursing. This practice, it was felt, had tended to be discarded to a degree which called for an official statement by the Academy as a whole. Accordingly, a resolution was drawn up stating that the membership of the Academy approved and recommended the encouragement of maternal breast nursing as the best method for feeding infants. This resolution was presented by Dr. Hess on February 27, 1947, and was officially approved.

The Committee has been in correspondence with Dr. Icie Macy Hoobler and Dr. C. Anderson Aldrich of the National Research Council's Committee on Maternal and Child Feeding. This group has appointed Dr. Aldrich to consult with various pediatric and obstetric authorities and to prepare a statement on the advantages of breast nursing. It is to be hoped that this statement, together with that presented by Dr. Hess for the Academy's Committee, will help in rescuing breast feeding from the present somewhat neglected state.

Until this change occurs, the Mothers' Milk Bureaus of the country will continue to face the difficult problems occasioned by shortage of supply. Your Committee feels that it must, therefore,

work largely upon encouragement of breast nursing before it can profitably take up the matter of promoting Mothers' Milk Bureaus which are ultimately dependent upon the larger matter.

Respectfully submitted,

CLEMENT A. SMITH, *Chairman*

Report was accepted. The Secretary was authorized to send out a copy of the statement prepared by Dr. Aldrich and the original motion which was passed.

* * *

The report of the Committee on Rheumatic Fever was read and the Executive Board desired until December before acting on this report. The motion to cooperate in making the movie was approved.

REPORT OF THE COMMITTEE ON NATIONAL DEFENSE

The Committee on National Defense, through its cooperating physicians, has examined 822 European children from May 20, 1946 to the same date in 1947. The children are coming over and being examined at the rate of 100 per month.

Respectfully submitted,

CARL H. SMITH, *Chairman*

Report was accepted.

REPORT OF THE COMMITTEE ON POSTWAR COURSE IN PEDIATRICS

No. of Hospitals circularized 159 (Jan. 1947)	No. of replies 118
No. of favorable replies 70	No. of men asking to be left on list 68
No. of questionnaires sent 202 (June 19, 1947)	No. of men asking to be dropped 50

Total on Active List 133 (as of July 1, 1947)

The above statistics were obtained before July 1, 1947, and though the greater part of the questionnaires were in, there are still a few that will come in later. Since we received the grant from Mead Johnson & Co. a year and a half ago, we have corresponded with 645 men.

The A.M.A. has been publishing a sufficient list of refresher courses. Since the demand for these has not been great, we have concentrated our efforts on trying to find full-time residencies as the demand for the residencies is still very great.

Respectfully submitted,

CLIFFORD G. GRULEE, *Administrator*

Report was accepted.

REPORT OF THE COMMITTEE ON TUMOR REGISTRY

A meeting of the Committee was held May 28, 1947.

Seven additional cases have been received for diagnosis and consultation since the last report, September 25, 1946.

Wilms' Tumor	Sarcoma botryoides
Teratoma of Ovary	Infantile nevus
Hamartoma	Reticulum cell sarcoma

Developmental malformation of orbit

The statistical data and photographs of the Registry have been used for educational purposes in the following cities thus far this year: Pittsburgh (Academy convention), New Orleans, Jersey City, Buffalo, Chicago and Rockville Center, Long Island. They are scheduled to be used later in the year in Atlantic City, Salt Lake City and New York.

In accordance with the recommendation approved by the Executive Board of the Academy at the Pittsburgh meeting, February 1947, enlargement of the personnel of the Committee has been undertaken. The following members of the Academy have been consulted and their names are respectfully submitted to the Executive Board for membership on this committee: F. Elmer Johnson, Springfield, Vt., George D. Johnson, Spartanburg, S.C., and Ralph N. Barlow, Logan, Utah.

The Committee believes that further progress in the attempt to reduce mortality from cancer during childhood will be aided considerably by further education of the profession and general public. There are many physicians whose specialties are other than pediatrics, but whose aid in this

phase of the program would be valuable. The Committee, therefore, recommends that certain physicians (surgeons, pathologists, public health officers, etc.) even though they are not members of the Academy, be periodically considered by the Executive Board for membership on the Committee.

This recommendation is not made with the object of enlarging the committee to an unwieldy size. Much assistance is required in this work and if recognized physicians in various fields are willing to contribute their experience and time we would like to have them. If it is the opinion of the Executive Board that the membership of Academy Committees should be restricted to Academy members only, consideration of these men as consultants is requested. This status is at present held by the eight members of the Consulting Board of Pathologists of this Committee.

Respectfully submitted,

HAROLD W. DARGEON, M.D., *Chairman*

The report was accepted. The chairman was granted permission to increase his committee by three members, and to add consultants.

* * *

Report of Dr. Harvey F. Garrison, National Liaison Officer to the American Medical Association was read as follows:

This is in the nature of a report of myself as Liaison Officer between the American Academy of Pediatrics and the American Medical Association.

I am sure practically all, if not all, of the members of the Academy have read the newspaper accounts, if not the Journal's, of the great meeting of the A.M.A. in Atlantic City June 9 through 13. It was my privilege and pleasure to attend the meetings of the House of Delegates, and to hear the addresses of the President and President-Elect. The position taken by the Association and the officers relative to the Taft Bill is about the same as that of the Academy; namely, to state that this bill more nearly meets the position taken by the Academy and the profession as a whole relative to any proposed remedial medical legislation for children. As is well-known, it has always been and still is the will of so-called organized medicine to oppose a federal control program of care for all people regardless of economic status. In other words, we believe that those who are able to pay for such services should be required to do so. It is refreshing to know that the positions of the A.M.A. and that of the Academy are approximately the same, except the Academy does not endorse any particular pending bill in Congress. We think this is the better position; because to say, as we do, that the Taft Bill comes more nearly meeting our needs than any other proposed legislation is certainly going a good long way. Still better, perhaps, would be to say that we favor any type of legislation, properly safeguarded, for federal aid to states for the care of children who are not financially able to pay for medical services.

Respectfully submitted,

HARVEY F. GARRISON

The Secretary was instructed to write a letter to the Treasury Department stating that a speaker could be sent to the Dallas meeting of the Academy to give a ten-minute talk.

A motion was passed not to have advertising in the Directory of the Academy.

Region IV's fund is to be voted upon at Salt Lake City.

The Secretary was granted permission to pay the expenses of the Pan-American Congress of Pediatrics, over and above what is collected, out of the funds received from Regions I and III.

It was voted the Annual Meeting for 1948 would be held in Atlantic City. It was voted meetings of the Academy be set up at least three years in advance.

The Report of the Committee on a Library and Museum of Pediatrics was accepted. It was recommended that the Academy have a permanent home in the Chicago area for offices and to house the library of Dr. Grulee, and that this recommendation is to be put up to the members of the Academy for their decision. It was moved and seconded that if in the interim it becomes necessary for Dr. Grulee to store his library that it be the responsibility of the Academy to do so, and if the Academy decides not to use the library it should be disposed of according to Dr. Grulee's wishes.

No action was taken on reorganization of the Academy.

After reading the report of the Chairman of the Committee on Honorary Fellows, it was voted this Committee be abolished.

It was voted that the special Committee on Associates be instructed to continue its work, to

increase its membership and to appoint such additional men as may be needed to carry on its work and to report at the Dallas meeting.

It was moved, seconded and carried that the Committee on Improvement of Child Health should continue in its overall program as outlined by Dr. Wilson as Chairman. After lengthy discussion it was decided to approve a budget of $75,000 for the use of the Committee for Improvement of Child Health provided this money could be raised from outside sources. The salary for Dr. John P. Hubbard to act as Executive Secretary for this Committee was set at $15,000, to begin when he has finished his services with the survey. Any funds which he receives from sources outside for medical service are to be deducted from this amount.

REPORT OF THE COMMITTEE FOR THE STUDY OF CHILD HEALTH SERVICES, JUNE 1, 1947

Collection of Data

The collection of the desired information is now nearing successful completion in nearly all states with the single exception of Wyoming. Plans are in progress to develop and conduct the Study in this last state during the coming summer months. The Director of the Study has been in communication with the Wyoming State Medical Society and plans to attend a forthcoming meeting of the Society. Provisional agreement has already been reached to have the Study conducted under the direction of a committee named by the State Medical Society. In laying the groundwork for the organization of our Study in Wyoming, we wish to express our appreciation for the help and cooperation received from the Council on Medical Services of the American Medical Association. At our request, the Executive Director of this Council has urged the Wyoming State Medical Society to support our Study.

As of the first of June, 1947, 21 states have completed the collection of information and have sent their schedules to the Central Office for statistical analysis. Most of the other states have sent in some but not yet all of their schedules.

At the annual meeting of the Academy in Pittsburgh, it was agreed that July 1, 1947 should be set as the deadline for the collection of the desired information from all states. In order to meet this deadline, certain states have required considerable assistance from the field staff of the Central Office. During the past several months, members of our field staff have been visiting states throughout the country and remaining long enough in each to assist state chairmen and their executive secretaries in completing their studies.

The experience of our field staff in their visits to state offices deserves a word of comment. For the most part, state chairmen have done an extraordinary job in organizing, financing and conducting their state programs. However, in certain states, chairmen and other members of the Academy have shown so little interest in the Study that it has had to be supported and virtually conducted from the Central Office. Accordingly, our field staff, numbering four or five persons, will be required for several months more in order to continue visiting states where the collection of data has been incomplete. From this experience it is apparent that closer attention must be given to state offices if the Study is to be adequately interpreted at the state level.

Processing the Data

Coding and tabulating of the data have proceeded as the material has been received from the states. It is estimated that approximately 700 man months of clerical work will be required for processing of the data. Of this total, about 25% was completed by June 1, 1947.

The personnel of the statistical division has been expanding to handle the increased volume of data being sent in by the states. As of June 1, 1947, there were 41 persons engaged in processing the material, including the professional staff of the statistical division. By early fall it is expected that this number will increase to 75. By then the coding and tabulating should be sufficiently advanced so that it will be possible to start putting tables to serve as the basis of state reports into the hands of state chairmen.

A machine tabulating unit has been established in Bethesda, Md., with the assistance of the U. S. Public Health Service so that tabulating may keep pace with the coding. This machine unit

includes two tabulators, two sorters and several punch and punch verifying machines. For those unfamiliar with this equipment, some appreciation of what is involved may be obtained from the fact that the rental which we are paying for this equipment is almost $1,000 a month.

Sampling Study

An additional feature has been added since the last report. A sampling study is to be conducted in New York, Mississippi, Illinois and Oregon in order to serve as a check on the validity of methods of the basic study of private practice in these and all other states. Throughout the country, approximately 60 to 70% of all physicians have given information about their daily visits (except pediatricians whose response has been closer to 100%). Briefly stated, this further study is intended to obtain data from 100% of a sample of physicians and dentists in order to determine any hidden factors which may exist in relation to the visits of physicians who did not respond to the original questionnaires. The cost of this additional study, which is estimated at $54,000, is being borne by the four states from funds made available through the Children's Bureau.

Anticipated Time Schedule for Completion of Study

Approximately nine states have been selected to serve as a basis for a preliminary draft of the national report. Priority will be given to the analysis of the data from these states in order that the preparation of the national report may begin without delay. From this Study of the selected states, preliminary papers will be prepared for presentation at the American Public Health Association meeting in October, 1947. A more complete report of the selected states will be presented to the Academy at its annual meeting in December, 1947. In accordance with policy, these papers will be submitted for approval to the Executive Board prior to their presentation.

The final draft of the national Study, including data from all states, should be completed within a year from present date.

State Reports

One of the most significant developments of the past year has been the growing emphasis upon the use of the collected data for planning at the state and local level. Following the meeting of the Academy in Pittsburgh, copies of the preliminary draft of the report of the pilot Study in North Carolina were distributed to all state chairmen in order to give to state chairmen a preview of the information which will be available for all states. Some state chairmen are already giving serious consideration to ways and means of preparing reports for their own areas. Distribution of the tables from the Central Office to state chairmen should be well under way by fall of this year.

Copies of the preliminary North Carolina report have also been distributed to all members of the North Carolina State Pediatric Society. After the members had had a chance to study the material, the Society met in order to draw from the mass of data those items which appear important from the point of view of local conditions. A small report committee is now working on the preparation of a final draft for North Carolina.

Study of Pediatric Education

The second main division of the Study, the Study of Pediatric Education, is now well beyond the half-way mark. Regional meetings attended by Chiefs of Pediatric Departments have been held in New York City; Winston-Salem, N.C.; Nashville, Tenn.; Los Angeles, Calif.; and Omaha, Neb. Immediately following these meetings, visits lasting two to three days have been made by Dr. and Mrs. Mitchell to the medical schools and affiliated hospitals in the areas covered by each of the regional meetings. Approximately 35 medical schools and their affiliated teaching hospitals have been visited so far. The remainder of the 70 approved medical schools and their affiliated hospitals will be visited during the next academic year.

Although this part of the Study has not received such wide publicity as the state programs, it is increasingly apparent that it is becoming one of the most significant aspects of the Academy's undertaking. At the outset, we were apprehensive about the reception we would receive at the time of these visits, but everywhere we have received evidence not only of cooperation but keen interest

in this phase of the Study on the part of Deans and Chiefs of Pediatric Departments. This attempt to evaluate pediatric education does not lend itself to such extensive statistical analysis as the rest of the Study. It will be reported in more descriptive terms with an attempt to give general impressions of the intangible features of training programs. There are, however, certain factors which will be tabulated by the Statistical Division from data being obtained by the use of two schedules.

Schedules IV-A has been designed to obtain information from medical schools and Schedule IV-B, from those hospitals which have been approved for pediatric residents. These two schedules were prepared in final form later than those of Series I, II, and III, and are submitted herewith for the first time.

Executive Staff

We wish to record with regret that, as of May 1, 1947, Dr. Charles L. Williams, Jr., discontinued service with the Executive Staff of the Study. After working full time for two years for the Academy on loan from the U. S. Public Health Service, he was given a new and urgent assignment by the Surgeon General. His contribution to the organization and conduct of the Study has been invaluable and will be gratefully acknowledged when the report is written.

As of May 15, 1947 our staff was strengthened by the addition of Mr. Eldredge Hiller as public relation and publicity director. He comes to us with broad experience in the fields of health and welfare, and has already given ample evidence of his sound judgment and critical appreciation of the implications involved in reporting the Study to the medical profession and the public at large. Throughout the course of the Study one of our most difficult jobs has been to overcome the inertia of not only members of the Academy but other physicians and laymen who have had too little opportunity to be adequately informed of the Academy's Study. It is considered a matter of utmost importance to promote a better understanding of the Academy's aims among pediatricians and other physicians if we are to gain whole-hearted support in the action which may result from the Study. Your committee, its executive director and Mr. Hiller himself are fully aware of the importance of integrating their public relations activities and publicity releases with those of the Academy as a whole.

As of June 1, 1947 the full-time personnel of the Study attached to the Central Office includes a total of 60 persons. Of these, two are on the payroll of the U. S. Public Health Service, two on the payroll of the Children's Bureau and 56 on the payroll of the Academy.

Financial Statement

Submitted herewith is a certified financial statement as of May 31, 1947. In submitting this statement, we wish to call attention to the last financial report to the Executive Board submitted November 24, 1946 wherein it was noted that the several states were unable to meet the full expenses of their state programs and it became necessary for the Central Office to come to the rescue of these states. Quoting from this earlier report, "This item for state programs has resulted in a budgetary deficit of $41,350 which is needed to meet budget requirements over and above the $45,000 pledged for payment in this account during the second year." The amounts pledged have now been received with the exception of $2,500 due from the Field Foundation. An additional $20,000 from commercial houses has been allocated to state programs. This still leaves a budgetary deficit of $20,000 which is yet to be met in order that the cost of state programs may be fully covered.

On April 2, 1947, $48,500 was received from the National Foundation for Infantile Paralysis completing in full their grant of $116,000 for a period of two years.

Under date of April 18, 1947 an application signed by the President of the Academy was made to the Surgeon General for second payment of a grant-in-aid to cover the cost of statistical analysis. The original total estimate submitted under date of August 7, 1946 was $249,750. Of this amount, $128,550 was received October 15, 1946. The revised total estimate is $254,327.32 of which the balance was requested. A recent unofficial and unconfirmed report from the National Institute of Health indicates that this request has been approved with a cut of approximately $25,000.

Respectfully submitted,

WARREN R. SISSON, *Chairman*

AUDIT REPORT—AMERICAN ACADEMY OF PEDIATRICS STUDY OF CHILD HEALTH SERVICES

MAY 31, 1947

By MAX R. BYERS, C.P.A.

Exhibit "A"

AMERICAN ACADEMY OF PEDIATRICS STUDY OF CHILD HEALTH SERVICES

Statement of Receipts and Disbursements, November 1, 1946 to May 31, 1947

Receipts		
Restricted Contributions:		
National Foundation for Infantile Paralysis	$ 48,500.00	
National Institute of Health	128,550.00	
Field Foundation	2,500.00	
Unrestricted Contributions:		
M & R Dietetic Laboratories, Inc.	10,000.00	
Carnation Company	10,000.00	
Pet Milk Company	10,000.00	
The Borden Company	10,000.00	
National Dairy Products Corporation	10,000.00	
Mead Johnson & Company	10,000.00	
Mennen Company	500.00	
Total Receipts		$240,050.00
Disbursements		
Salaries	$ 78,089.65	
Travel	7,869.74	
Office Equipment	6,708.23	
Postage	946.49	
Office Supplies	1,910.42	
Office Maintenance	740.66	
Rent	8,550.00	
Heat, Light, Water	568.40	
Machine Rentals	1,554.88	
Printing & Publicity	3,782.35	
Telephone & Telegraph	1,336.04	
Periodicals & Books	65.72	
Car Upkeep & Travel by Car	135.15	
Bonds & Insurance	612.56	
Accounting & Auditing	1,000.00	
Legal Fees	500.00	
Miscellaneous	229.63	
State Programs	11,952.90	
Educational Study	6,355.20	
Advances for Sampling Study	1,822.95	
Total Disbursements		134,460.97
Balance		$105,589.03

Exhibit "B"

Statement Showing Reconciliation of Accounts, May 31, 1947

Cash in Banks		
Foundation Account	$ 42,019.10	
NIH Account	58,680.92	
Academy Account	62,938.91	
Total Cash in Banks		$163,638.93
Funds Available for Expenditure		
Balance, Exhibit A, 5/31/47	$105,589.03	
Balance from Prior Period Ending 10/31/46	56,231.75	
Total Funds Available		$161,820.78
Income Taxes Withheld from Salaries		1,818.15
Total		$163,638.93

COMMENTS

Receipts from the National Foundation for Infantile Paralysis are maintained in a bank account known as the "Foundation Account." Receipts from the National Institute of Health are deposited in an account called the "NIH Account." Disbursements from these two accounts are restricted within certain budget limitations. The unrestricted funds are deposited in what has been designated as the "Academy Account." Separate accounting records are kept for receipts and disbursements for each of these three accounts. For the purpose of the accompanying statements the accounts have been consolidated.

The Field Foundation has pledged to the Study of Child Health Services for receipt in 1947 a total of $5,000 of which $2,500 has been received, leaving $2,500 yet due. The total $5,000 pledged by the Field Foundation for 1947 is restricted to the publicity of the results of the survey.

The Salaries account listed under disbursements in Exhibit A includes the salaries of all personnel paid through the three accounts; the total payroll as of June 1 being 56 persons.

The amount of $7,869.74 in the Travel account includes $1,100 for travel expenses of the members of the Committee for the Improvement of Child Health attending the committee meeting held in Chicago, April 26 and 27, 1947.

The item Educational Study in the amount of $6,355.20, Exhibit A, represents the travel expenses of the chiefs of pediatric departments attending the regional meetings held in New York; Winston-Salem, N.C.; Nashville, Tenn.; Los Angeles, Calif.; and Omaha, Neb.; and also the travel expenses of Dr. and Mrs. Mitchell. Salaries for all personnel of the educational study are included in the Salary account.

The report of the Committee on Study of Child Health Services was discussed.

No action was taken.

The following resolution was unanimously passed by the Executive Board of the American Academy of Pediatrics at the meeting held July 8, 1947, in Washington, D.C.:

Resolved: In behalf of the American Academy of Pediatrics, the Executive Board wishes to express to Dr. Harry A. Ong and his local committee their sincere appreciation for their complete cooperation, and untiring efforts which have culminated in such a splendid inauguration of the First Pan-American Congress.

Meeting adjourned.

Pediatrics

VOLUME I JANUARY 1948 NUMBER 1

SPECIAL FEATURE SECTIONS

THE PEDIATRICIAN AND THE PUBLIC

EDWARDS A. PARK, *M.D., Editor*

THE NORTH CAROLINA PLAN FOR IMPROVED MEDICAL CARE

By ARTHUR H. LONDON, JR., M.D.
Durham, N.C.

IN THE fall of 1943, a group of members of the State Medical Society began a study of medical needs of North Carolina. It was obvious that citizens of many sections were not receiving adequate medical care. While this condition was accentuated by the war, it was known to have existed for many years and that the requirements would likely increase after the war. These doctors were of the opinion that organized medicine within the state has a very definite responsibility in furnishing leadership for a movement that would bring improved medical attention to larger groups of citizens.

While North Carolina has made much progress economically in the past two decades, it, nevertheless, has a comparatively low per capita income—this, of course, is true of most southern states. It ranks third from last in the nation in the ratio of doctors to the population, and is almost as low with regard to hospital beds. Thirty-four of its 100 counties have no hospital beds, and 55 counties have no beds for Negroes. Seventy-three per cent of its population lives in rural areas—towns of 2,500 or less. Roughly, 70% of its doctors live in 10 of the more populous counties.

After many discussions, the group agreed that the following factors were of importance in the overall problems:

1) Shortage of medical personnel, hospitals and their unequal distribution.
2) Inability of a large number of persons to pay for good medical service.
3) Lack of information or initiative on how to use facilities now available or that may become available.
4) Necessity for state aid to local communities to construct and maintain institutions in areas not economically able to provide for themselves.
5) Necessity for local control and administration of all state-aided hospitals or treatment centers for efficient operation.

Note: Dr. London's presentation of the North Carolina Plan is a compilation of articles written by other physicians who were active in promulgating the program.

6) The resolution that funds which might become available from the federal government be accepted only on the basis that control and management of the institutions remain in the local community.

The group having concurred in these basic principles, the governor of the state, the Honorable J. M. Broughton, was consulted. His interest was immediate and positive. Because of the demonstrated need for more medical personnel in the state, the governor felt that the State University should be brought into the picture. After consultation with university trustees and with their approval, he initiated a study of the entire problem.

This is the genesis of the "Governor's Plan," as it became known in North Carolina. It is the most significant and far reaching development in fifty years, or since the State began the support of public education. A very capable hospital and medical care commission of 50 men and women were immediately appointed to represent: (1) the medical and allied professions in all branches, medical specialists, general practitioners, public health officers, medical educators, nurses, pharmacists, dentists, and hospital administrators; (2) industrialists; (3) labor leaders; (4) leaders of farm organizations; men and women; (5) welfare organizations; (6) leaders of the Negro race; (7) the churches; and (8) the press.

Except for the purpose of prosecuting a war, probably at no time in the history of the state have a group of responsible citizens representing such widely divergent economic and social interests been brought and held together for a year for a purpose of studying a problem of such importance to the welfare of the state as a whole. That industrialists and labor leaders, old line southerners and Negroes, farmers and bankers, sociologists and doctors of medicine could sit together with a common interest and common purpose is a very healthy sign of progress in the South, and is an example of an intelligent approach to many problems affecting public welfare.

In order to study all of the many elements involved, the following sub-committees were formed with chairmen, whose interests were in the assigned area of the study:

1) The University Medical School and Hospital.
2) Hospital and medical care needs for the rural population.
3) Hospital and medical care needs for the urban and industrial population.
4) Mental health and hospitalization.
5) Hospital and medical care programs in other States.
6) Statistical data and publication.

There was spontaneous approval of the press, pulpit and of the general population. There was, also, opposition from a section of the medical profession and from other sources. Cries of "State medicine," "State bankrupty," and other slogans were heard not infrequently. When the further study of the commission actually got underway, the source and reason for most of the opposition for whatever future recommendations may be made were fairly well known.

Throughout long arduous months the sub-committees worked, studied and debated in an attempt to bring together the many varied interests and points of view into a sound and workable program designed to meet the health needs of the entire state. Advice was secured from various agencies concerned with health programs and hospitalization.

In brief, a majority of the commission believed that it was wiser at this time to attempt a solution of medical care problems on a general basis of voluntary cooperations

between all parties concerned, with the government (local, state and federal) as a necessary supplementary agency. It was believed that orderly evolutionary reform, with responsibility for and control of medical care on a local level, is more in keeping with the American philosophy and ideals of a democratic society. However, it was believed that the state must assume some responsibility, possibly through cooperation with the federal government in aiding and supplementing local efforts to provide and maintain facilities for the health of its citizens.

The final report of the commission detailed the needs of the state and was a composite of more than a dozen reports of various committees working on different angles of the subject. The report concluded, "In order both to remedy the most urgent needs of today and work toward the larger program of tomorrow, three things are supremely needed: more doctors, more hospitals, more insurance.

"We cannot have enough doctors without more hospitals . . . nor enough hospitals without greater popular ability to pay for hospital services . . . and such ability to pay on the part of the poorer half of our population is impossible without insurance.

"The masses of the people are determined to find some way to work towards the goal set forth by Governor Broughton; i.e., medical security. To fail to help them may lead to leadership dangerously unsound. Our desire is to help constructively—to cooperate for larger things with existing physicians, hospitals and other medical agencies."

To meet these needs the following measures were recommended, which in the light of proposals considered in other states and in Congress must seem "conservative," although to the reactionary element, professional and lay in North Carolina, they appeared dangerously "radical" at the time:

A. To meet the needs for more medical personnel, and especially as an essential part of the foundation for a comprehensive state-wide hospital and medical care program, it was recommended that the present two-year medical school of the University of North Carolina be expanded into a four-year school with the construction of at least a four hundred bed general hospital, available for patients from all economic levels throughout the state, but especially for the low income groups. Additional facilities would be provided for tuberculous patients, and a small psychiatric institution would be developed with emphasis on early mental disorders and on cooperation with the State mental hospitals in a program of mental hygiene throughout the state.

The University Medical Center was visualized as an integral and essential part of any program designed to provide better medical care in the state. (1) In providing opportunities for training state residents in medicine, nursing, medical technology, dietetics, hospital administration, and possibly later, in dentistry; (2) In improving the quality of medical care through a program of continuation courses for the practicing physicians in the state, at the center, but especially through carrying post-graduate instruction to the small hospitals and health centers in the more rural and medically isolated areas; (3) In supplying, as a part of the medical care and education program, a consultation and teaching service by members of the university staff to the smaller hospitals in the form of the services of roentgenologists, pathologists and clinical specialists. It was believed that through these services the quality of medical care can be improved and standards maintained and our younger physicians will be better satisfied to locate and to remain in smaller communities with assurance of this type of professional stimulation and aid.

In order to get more rural doctors it was generally agreed that more capable students in rural areas should be enabled to study medicine. The commission recommended the

establishment of a loan fund for promising youths who wish to become physicians in North Carolina, with the extra inducement provided for those who would agree to practice medicine for at least four years in rural areas.

B. In order to insure a more adequate quantity and more equitable distribution of hospitals, it was proposed that the state provide a building fund, to be expanded under prescribed regulation by a State Hospital and Medical Care Commission, for assisting counties and communities to build or enlarge hospitals or health centers in areas not adequately served by existing hospital facilities. State aid for this purpose would be available only as a supplement to local efforts and only for building or enlarging publicly owned or non-profit hospitals.

It was suggested that such a state-wide program to meet the urgent hospital needs should eventually include the following types of hospitals:

a. A few hospitals of 100 or more beds, complete in all diagnostic and treatment facilities to serve both urban and rural people.

b. Small county or rural hospitals of 50 beds, including improvement or enlargement of existing facilities.

c. Health centers of 20 to 30 beds in small rural communities, available to all qualified physicians in the area, to provide simple diagnostic and laboratory aids, emergency surgical treatment, dental service, obstetrical service, a small number of beds for cases not requiring services of a larger hospital, and facilities for the health department to carry on its preventive medicine and educational activities. It was believed that this type of health center or small community hospital is essential for improving the quantity and quality of medical service in rural sections, for attracting younger doctors to such areas and in furthering health education.

To encourage continuing community pride, initiative and support, any hospital receiving aid should remain under the professional, administrative and financial control of its own board of trustees elected locally from representatives who are citizens in the community.

To provide for more adequate care for low income persons in hospitals and to aid in the maintenance of the smaller hospitals, it was recommended that the State appropriate one dollar per day for each medically indigent person hospitalized in approved hospitals. With a similar amount now provided by the Duke Endowment, a charity patient would be provided with $2.00 per day towards hospital care and it was presumed that counties, municipalities or other sources would contribute the balance. It was recommended that the legislature provide for a permanent State Hospital and Medical Care Commission of adequately qualified persons, which should adopt policies designed to maintain the highest standards of service, efficiency and professional excellence in the hospital program and to administer the student loan fund, strict provision being made to safeguard the program from political interference.

C. To meet the needs for more insurance, the commission recommended that the state, through the Hospital and Medical Care Commission, promote and encourage in every practical way the development of voluntary pre-paid medical care plans, and that the two Blue Cross Organizations in the State, the Hospital Care Association and the Hospital Savings Association be asked to extend their present services towards a more comprehensive coverage. This is particularly important for people in the rural areas who depend so heavily on the general practitioner for medical service.

In the two months between the time that the final report of the commission was made public and the opening of the general assembly in January 1945, members of the commission, aided by a committee from the State Medical Society, carried on a campaign of information to the public as well as the medical profession. Speakers presented the recommendations before county medical societies, civic clubs, welfare organizations, church groups, etc. The daily and weekly newspapers were of considerable help in the campaign. As a result of these activities, the recommendations were approved, in whole or in part, by 63 of the 65 county medical societies, the North Carolina Public Health Association, the State Hospital, State Nursing and State Pharmaceutical Associations, the State Congress of Parent-Teachers, the State Social Service Association, many church groups and by civic clubs in many towns.

In the 1945 Legislature a law was passed adopting the commission's report as state policy. A permanent state agency was established, known as the State Medical Care Commission. It is composed of eighteen members, three of which are doctors, nominated by the State Medical Society, as well as a nurse, a pharmacist, a dentist and two hospital executives. The remainder of the members represent business, farming, labor, etc. One Negro is included. Funds were provided to pay one dollar per day for charity patients to all non-profit hospitals in the state, and the medical student loan fund was established. A committee of out-of-state experts was called for, for the purpose of locating the expanded medical school and further survey required for establishment of hospitals and rural health centers.

The Medical Care Commission began its work in July 1945. It has been greatly aided by the North Carolina Good Health Association, a lay organization of thousands of citizens whose avowed purpose is to promote the work of the Medical Care Commission. Kay Kyser, who is a native of North Carolina, took a most active part in the work of the Good Health Association. Prior to the meeting of the 1947 Legislature, a most intensive campaign was carried out under his direction. Every movie theater in the State showed skits prepared by Kyser in which leading movie actors took part. Every radio station carried from three to thirty minute programs each day, some of which came from Hollywood, promoting the Good Health Plan. All public schools put on programs or oratorical contests concerning good health. A considerable sum of money was raised, offices secured and an able executive secretary installed. No movement in North Carolina has ever been so generally publicized.

The program calls for the expenditure of 48 million dollars during the next five years: approximately one-third is to come from the federal government under the Hospital Survey and Construction Act of 1946; the local communities are to contribute one-third of the building costs; and the remaining one-third is to come from the state.

The North Carolina Plan then proposes to exercise "State Rights" in Medical Care. It is based on local control of all facilities—that is, management and administration within the local community. It proposes the integration of medical education and medical care. All three of the state medical schools are asked to unite in an overall effort to aid in staffing and providing diagnostic aid for the smaller hospitals. It is admitted that to some extent the program is experimental; but, nevertheless, it is an honest effort on the part of a state to solve its medical problem. The medical profession furnished the leadership of the movement and thereby assumed considerable responsibility for its success.

In the 1947 legislature the entire program was approved and sums were voted to finance

it. The permanent Medical Care Commission is now working on carrying out the program in all of its many ramifications. Various counties are preparing plans for their local hospitals, and are presenting them to the Medical Care Commission preparatory to beginning construction.

In an address delivered before the North Carolina Good Health Association in July, 1947, Dr. Thomas Parran stated: "Viewing the nation's health problems and programs, it is clear that North Carolina is in the vanguard with respect to advancement of medical education and expansion of medical care facilities . . . in doing this, you will not only be helping the people of your own State, you will be bringing us all closer to the high goal expressed by Governor Broughton, when he declared his belief in 'the equal right of every persons born on earth to needed medical and hospital care whenever and wherever he battles against disease and death.' "

TRENDS

IN HEALTH LEGISLATION AND ADMINISTRATION

JOHN P. HUBBARD, M.D., *Contributing Editor,*
Washington, D.C.

IT IS increasingly evident that the American Academy of Pediatrics has no intention of being carried along passively in the flow of events which are continuously being directed toward the improvement of child health. The Academy has demonstrated its forthright attitude in undertaking a nation-wide Study of Child Health Services and in appointing a Committee for the Improvement of Child Health to implement the findings. Its members, in participating in this project, have indicated that the broader aspects of child health are just as much a doctor's responsibility as are care of the sick, teaching, and research.

In step with this trend within the Academy, the editors of PEDIATRICS believe it appropriate to keep readers posted on what is happening; and, in so far as possible, on what is likely to happen concerning child health, particularly in federal agencies and congressional circles. This and subsequent descriptions of events and trends are intended to be unbiased and factual, presenting both sides of controversial matters so that conclusions may be formed from critical appraisal of things as they are.

PENDING LEGISLATION

By the time that these pages are published, the 80th Congress will have reconvened for its second session. Important unfinished business related to health legislation will soon appear—may already have appeared—on the congressional agenda. The hot controversy over a national health program will be resumed in the hearings before the Committee on Labor and Public Welfare and will bear watching.

When, over a year ago, congressional leadership changed from Democratic to Republican and when, in February, 1947, the A.M.A. sponsored Republican National Health Bill (S-545) was introduced by Senator Taft, a happy feeling arose within sections of the medical profession over the hope that the contentious Wagner-Murray-Dingell bills and Pepper bill could be considered dead and buried. On the contrary, neither the Wagner-Murray-Dingell bill nor the Pepper bill is dead. These bills are very much alive and are backed by great momentum which has been accumulating since 1939 when Senator Wagner first introduced a comprehensive health bill (S-1620). During these eight years, successive Wagner-Murray-Dingell bills have been re-introduced and debated extensively, together with the Pepper bills which have appeared more recently. Their momentum is still potent and they are still strongly supported by the Federal Security Agency, the Public Health Service, the Children's Bureau, and certain powerful non-governmental organizations. These, countered by the Taft bill, will be the subject of lively debate at the hearings before the Senate Committee on Labor and Public Welfare to which they have been referred. Many old arguments and perhaps some new ones will reverberate through medical and congressional halls. It therefore seems timely that in this first issue of PEDIATRICS an attempt should be made to review the provisions

of the more recent bills and some of the points of dispute. Such a review may assist in a clearer understanding of the continuing discussions.

Provisions of the Bills

With the war's end President Truman gave renewed impetus to a government sponsored comprehensive national health program. On November 19, 1945, he recommended to Congress a program which consisted of five major parts: (1) construction of hospitals; (2) expansion of public health, maternal and child health services; (3) medical education and research; (4) prepayment of medical costs; and (5) protection against loss of wages from sickness and disability.

On the same day a new Wagner-Murray-Dingell bill (S-1606) was introduced simultaneously in both houses of Congress. This bill provided for three of the five points of the President's program; namely, expansion of public health, maternal and child health services; medical education and research; and prepayment of medical costs through expansion of compulsory social insurance. It did not make provision for hospital construction; this was subsequently provided for in the Hospital Survey and Construction Act (Hill-Burton bill), which became law in August, 1946. The other point not covered by the Wagner-Murray-Dingell bill of 1945—provision of insurance benefits to compensate for loss of wages during sickness and disability—was also handled in a separate bill.

The provisions of S-1606 were contained in two major sections: Title I and Title II. Part A of Title I provided increased federal grants-in-aid to states for public health services and allowed increased appropriation to the U. S. Public Health Service for demonstrations, training of personnel and administrative expenses. Each state, in order to receive the federal grants, would be required to develop its own plans based on individual state needs, these plans to be approved by the Surgeon General. Part B, Title 1, provided for grants to states for maternal and child health services and for services to crippled children. In order to receive funds under this provision, state plans were to be approved by the Chief of the Children's Bureau. Part C, Title I, provided for federal grants to states for medical care to needy persons as determined by the states under a federal-state plan of public assistance. The amounts of the grants to states for each of these parts would be on a variable basis so as to give special aid to the poorest states with matching by the states to the extent that the federal grants would range from 50% to 75% of the total public funds expended under the state programs.

Prepayment of personal health service benefits were provided for in the bill's second major section, Title II. This proposed to amend the Social Security Act in order to finance the program, increasing to 6% the current 3% payroll tax on wages up to $3,600 a year thus automatically extending personal health benefits to those already eligible to social security benefits. Each person entitled to receive benefits would select his physician (subject to the physician's consent) from those who entered into an agreement to furnish services. Physicians were to be paid on a fee, per capita, or salary basis or a combination or modification of these bases as elected by the local practitioners and approved by the Surgeon General.

A National Medical Policy Council was to be established to advise the Surgeon General on provisional standards, grants-in-aid for professional education and research projects, adequate and suitable arrangements for paying for personal health service benefits, and so forth.

The official record of committee hearings on S-1606 fill four closely packed volumes. Throughout the testimony certain arguments repeatedly recur, highlighting the attitudes of both the proponents and opponents of the bill. If one were to pick out the two points which, more than any others, are found at the focus of the controversy these would undoubtedly be: (1) the principle of compulsory health insurance, and (2) the authority that would be vested in the federal government, specifically the Surgeon General of the Public Health Service.

Those who support compulsory health insurance point to the high cost of medical care under the existing system which places private medical care beyond the reach of the great majority of persons in this country. It has been estimated that 85% of the population have annual incomes less than $3,000 and are therefore unable to meet the cost of major illness, while half of American families and individuals have incomes below $1,500 and are unable to afford private care even for minor illnesses. The bill, it is claimed, would change this situation and "would lift the cost of illness off the crippled back of the sick and place it on the broad shoulders of a robust society." (Dr. Joseph Mountin appearing for Dr. Thomas Parran.) Voluntary plans are criticized as too slow in development and too limited in their coverage, failing to reach millions of people of limited means, the very people most in need of improved services. It is maintained furthermore that with a national governmental system controlled by a National Advisory Policy Council with the Surgeon General as chairman, the quality of service would be more uniformly maintained since minimum standards would be established and supervised on a nation-wide basis.

In the arguments brought forward by those who opposed the 1945 Wagner-Murray-Dingell bill, it is frequently stated that it would regiment doctors and patients, that it is an undemocratic and un-American interference with the rights of the individual, and that it places far too much power in the hands of one individual, i.e., the Surgeon General. The fight for states rights, as old as the history of our government itself, recurs repeatedly in the argument that different localities should be allowed greater freedom in developing plans to meet their individual needs.

When it became apparent that the Wagner-Murray-Dingell bill would not be acted upon in the 79th Congress, the second of the recommendations urged by the President—expansion of maternal and child health services—was attended to in more direct fashion by a non-partisan congressional action introduced by Senator Taft. The result was the doubling of the $11,000,000 annual appropriation to the Children's Bureau thus providing $22,000,000 for increased grants-in-aid to the states to augment their services for maternal and child health and welfare.

The Wagner-Murray-Dingell bill of 1947, currently the subject of public hearings in the Senate Committee on Labor and Public Welfare, maintains the essential principles of national compulsory health insurance. However, it is evident that major objections raised by the opponents of S-1606 have had their influence and have resulted in certain significant changes. Under this new bill (S-1320) less power is placed in the hands of the Surgeon General. The administration would be under a board of five persons of whom the Surgeon General would be one, serving ex-officio. The chairman of this board would be designated by the President.

A second important change in the 1947 bill is provision for a greater degree of freedom to individual states in local administration under state-wide plans. Each state, upon agreeing to observe minimum national standards, is guaranteed the right to

administer the system for its own population and would be allocated a definite amount of money each year from the national health insurance funds. This amount would not be dependent upon the discretion of Federal officers.

Senator Pepper, in supporting S-1606, introduced certain amendments which were intended to cover the main features of his earlier maternal and child welfare bill (S-1318). "If," said Senator Pepper, "the unfortunate event should occur that 1606 should not be adopted, why then, of course, 1318, the maternal and child welfare bill can be considered as a separate matter." Accordingly, in the rush toward adjournment of Congress in July 1947, Senator Pepper dropped into the hopper a new maternal and child health bill (1714), a bill altogether similar to the earlier Pepper bill (S-1318). In introducing this bill he sent off a parting shot, "I want to remind Congress that each day debate goes on, we lose 8 more mothers and 85 more babies needlessly."

Shortly after the opening of the Republican Congress, Senator Taft introduced a bill (S-545) which had the strong backing of the American Medical Association. This bill proposed to bring together all the scattered Federal health agencies into a single independent National Health Agency in the executive branch of the government, headed by a physician appointed by the President. The bill authorized the appropriation of $3,000,000 to assist states to make state-wide surveys of existing services. It provides further for grants-in-aid to states amounting to $200,000,000 a year to assist the states in carrying out plans for providing general health, hospital, and medical services for persons whose income is insufficient to pay in whole or in part the cost of such services. The states would be required to match the funds on a variable basis. The bill also authorized an appropriation for dental services, beginning with $8,000,000 the first year, increasing to $20,000,000 by the fourth year. The bill requires that all services must be given on the basis of a means test with the exception of periodic physical examination of school children which must be given without charge.

This bill (S-545) was designed to reach in particular the low income group, providing free service for those unable to pay. For those able to pay part of their medical care, the program must "provide for the collection of proper charges of less than the total cost of such services." In introducing this bill, Senator Taft stated, "the bill we are proposing proceeds on the theory that the United States already has a comprehensive medical service, as good as any in the world, but that there are gaps in that service, particularly in reaching the lower income groups. Our bill encourages and assists every state to fill up these gaps, building upon the existing foundation. Free service will be furnished to those unable to pay. Voluntary health insurance plans will be encouraged, so that health insurance may be available to the great numbers of those who desire it without forcing anyone, patient or doctor, to abandon his present practices. . . . Above all, the bill places the primary public responsibility for the health of the people on the state and local governments. Medical care is primarily a local and state concern. We believe that Federal funds are necessary but only to aid the lower income groups of the population and furnish financial assistance to state and local governments to supplement the limited funds available for health. We believe this plan is an American plan based on assistance to the needy, liberty to the individual, and a free medical profession. Only by retaining such freedom, can we hope to go forward with the progress in medicine and health for which America has been distinguished."

The American Medical Association which had been instrumental in the preparation of this bill reported it in an editorial which appeared in its *Journal:* "Physicians who read

this carefully will realize that the principles set forth in this measure more nearly approximate the principles of the ten-point national health program of the American Medical Association than any of the other health measures thus far proposed."

In opposition to the Taft Bill, we find the same individuals and agencies who have supported and continue to support the Wagner-Murray-Dingell bill. They charge that this bill is inadequate to meet the need in that it makes provision for health services for needy persons only and fails to make provision for the self-supporting population which also needs help in obtaining more and better health services. The more violent of its opponents characterize it as a "medical dole" or a "political sop to the demands for a better medical system."

Dr. Reginald Atwater, appearing for the American Public Health Association, pointed out that the size of the federal appropriation is sufficient to care for only about 5% of the population, whereas 85% of American families and individuals, i.e., those with annual incomes less than $3,000, require outside assistance in the care of major illnesses. Furthermore, available funds would be curtailed by the expensive as well as cumbersome administrative machinery of a means test which he deems particularly objectionable. Realizing that Congress may not be prepared at the moment to legislate a complete program, Dr. Atwater brought forth the suggestion that programs to satisfy some of the most urgent health needs be given priority. One of the priority needs is of a special interest to the Academy of Pediatrics in relation to the current study of pediatric education. In his statement, Dr. Atwater called particular attention to the especially urgent need related to medical education and research: "Only recently the presidents of nineteen American universities joined in a warning of the uncertain future of medical education, upon which medical care and public health are dependent. They declared that with present resources few if any of the seventy recognized medical schools in the United States can be confident of maintaining their programs at a high level in the future. . . . Federal grants-in-aid for medical education and research can play an important role in increasing our scientific knowledge of the prevention, control and treatment of those diseases before which we are powerless today."

When Congress convenes in January, both parties will be aiming at the fall elections. Their actions must be judged accordingly. Hearings on the health bills will continue, but it is unlikely that either a comprehensive Democratic or Republican health program will be acted upon in this session of Congress. The situation shapes up somewhat as follows: President Truman's personal upswing in popularity has to some degree neutralized the Republican strength in Congress. The Republicans are unlikely to set up any comprehensive federal health program and have the administration of such a program fall into the hands of Democratic appointees. Furthermore, the Democrats are unlikely to give much help to a Republican Congress in passing legislation for which the Republicans would get the credit.

One bill which will undoubtedly receive attention early after Congress convenes is the Taft-Fulbright-Aiken bill (S-140) for the creation of a Department of Health, Education, and Security of cabinet rank. This bill was opposed by the American Medical Association and other organizations and was temporarily shelved. With the appointment of Oscar R. Ewing, succeeding Watson B. Miller as Federal Security Administrator, it becomes increasingly likely that the bill will receive favorable attention in Congress. In this connection it is interesting to note a news item in the bulletin of the Association of American Physicians and Surgeons, "The Association of Amercan Physicians and Surgeons

by unanimous action of its House of Delegates, meeting in Chicago, June 28, withdrew its approval of the Taft health bill (S-545) because of the dangerous possibility that the measure would be administered by the Federal Security Administration. Senate Committee approval of S-140 gives strong indications that it will be enacted into law and substituted for Title I of S-545. Thus, the Taft bill would be adminstered by the Social Security forces."

Another bill which we expect may receive early attention after Congress convenes is the National School Service bill. This bill was introduced into the Senate by Senator Saltonstall (S-1290) and into the House by Representative Howell (HR-1960). It will be discussed separately next month in this column.

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PUBLIC HEALTH, NURSING AND MEDICAL SOCIAL WORK

LEONA BAUMGARTNER, M.D., *Contributing Editor*

INCIDENCE OF COMMUNICABLE DISEASES IN THE UNITED STATES, NOVEMBER 2-29, 1947

The accompanying table summarizes the incidence of nine important communicable diseases, based on weekly telegraphic reports from State health departments. The reports from each State for each week are published in *Public Health Reports* under the section "Incidence of Disease."

NUMBER OF REPORTED CASES OF 9 COMMUNICABLE DISEASES IN THE UNITED STATES DURING THE 4-WEEK PERIOD NOVEMBER 2-29, 1947, THE NUMBER FOR THE CORRESPONDING PERIOD IN 1946, AND THE MEDIAN NUMBER OF CASES REPORTED FOR THE CORRESPONDING PERIOD, 1942-46

Division	Current period	1946	5-year median	Current period	1946	5-year median	Current period	1946	5-year median
	Diphtheria			Influenza[1]			Measles		
United States	1,387	1,514	1,828	8,963	8,662	8,662	7,855	5,990	8,146
New England	34	88	44	14	12	36	176	1,883	1,457
Middle Atlantic	142	164	142	24	42	76	1,036	1,402	1,992
East North Central	188	195	181	112	128	232	3,451	708	880
West North Central	85	125	159	82	22	95	1,160	121	222
South Atlantic	440	338	365	2,977	2,452	2,452	618	751	434
East South Central	184	223	223	378	224	275	114	106	153
West South Central	186	208	347	4,758	5,139	4,037	289	287	245
Mountain	76	67	70	535	574	659	456	330	683
Pacific	52	106	122	83	69	128	555	402	977
	Meningococcus meningitis			Poliomyelitis			Scarlet fever		
United States	207	250	397	896	1,581	932	5,941	7,051	10,714
New England	15	19	49	34	91	52	499	581	977
Middle Atlantic	39	54	98	164	167	158	1,109	1,339	1,765
East North Central	43	43	96	239	442	147	1,553	2,306	2,864
West North Central	16	25	35	61	372	73	645	528	1,098
South Atlantic	24	24	53	126	102	56	656	630	1,446
East South Central	18	20	40	59	53	39	407	403	707
West South Central	21	20	32	18	153	64	239	231	526
Mountain	11	8	11	93	51	30	297	285	409
Pacific	20	37	44	102	150	150	536	748	1,224
	Smallpox			Typhoid and paratyphoid fever			Whooping cough		
United States	5	16	24	256	229	304	10,425	7,703	9,377
New England	0	0	0	14	21	16	1,410	1,020	1,162
Middle Atlantic	0	0	0	28	23	38	1,933	2,094	2,112
East North Central	0	5	8	27	26	31	2,639	2,282	2,282
West North Central	2	3	6	13	13	14	659	225	433
South Atlantic	1	1	1	59	29	43	1,265	814	983
East South Central	0	3	3	22	22	31	388	182	371
West South Central	0	3	4	58	52	70	1,129	627	627
Mountain	2	0	2	10	15	29	524	181	308
Pacific	0	1	1	25	28	22	478	278	587

[1] New York, North Carolina, and Pennsylvania excluded; New York City and Philadelphia included.

Data furnished by the Division of Public Health Methods, United States Public Health Service.

Diseases Above Median Incidence

Influenza.—A total of 8,963 cases in influenza was reported for the 4 weeks ended November 29. The 1942-46 median for the corresponding period was 8,662 cases which was represented by the 1946 incidence. A slight excess over the 5-year median was reported in the South Atlantic and South Central sections, but in all other sections the incidence was below the median seasonal expectancy. Of the total cases Texas reported 4,199, South Carolina 1,754 and Virginia 1,056, those States being mostly responsible for the relatively high incidence in the sections in which they are located.

Whooping cough.—While this disease has dropped from the high level reached earlier in the season, the current incidence was 1.4 times the 1946 incidence during the same 4 weeks, and about 11% above the median for the preceding 5 years. An excess over the normal seasonal incidence was reported from all sections except the Middle Atlantic and Pacific; in those sections the number of cases was slightly lower than the normal seasonal incidence.

Diseases Below Median Incidence

Diphtheria.—For the 4 weeks ended November 29 there were 1,387 cases of diphtheria reported, as compared with 1,514 in 1946 and a 1942-46 median of 1,828 cases. After a slight rise in the incidence of diphtheria during 1945 and the first 6 months of 1946 the number of cases started to decline again and the current incidence was the lowest on record for these 4 weeks in any year for which data are available in this form. In all sections except the South Altantic the current incidence either fell below or closely approximated the median. The recent rise was first reported from the South Atlantic and South Central sections and it is significant that the number of cases (440) reported in the South Atlantic section was higher than in 1946 and 1.2 times the median for the 5 preceding years; in the South Central sections the incidence was relatively low during the currrent 4-week period.

Measles.—The number of cases of measles (7,855) was 1.3 times the 1946 figure for these same 4 weeks, but it was slightly below the 1942-46 median. Michigan (2,132 cases) in the East North Central section, and Minnesota (756 cases) in the West North Central section were mostly responsible for the excesses in those sections over the medians for the preceding 5 years. Minor excesses were reported from the South Atlantic and West South Central sections, but in the other 5 sections the incidence was relatively low.

Meningococcus meningitis.—The incidence of this disease continued at a relatively low level. The 207 cases reported for the 4 weeks ended November 29 was about 83% of that for the corresponding period in 1946 and 52% of the median for the preceding 5 years. In each section of the country the number of cases was comparatively low and for the country as a whole the current incidence was the lowest since 1941 when 145 cases were reported for the corresponding 4 weeks.

Poliomyelitis.—The number of cases of poliomyelitis dropped from 1,638 during the preceding 4 weeks to 896 for the 4 weeks ended November 29. The late persistence of this disease in some States has retarded somewhat the rate of seasonal decline, but the current incidence was only about 57% of that reported during the corresponding 4 weeks in 1946 and it was slightly lower than the 1942-46 median. Of the total cases Ohio reported 121, New York 104, Idaho 75, California 67, North Carolina 57 and Illinois and Michigan 44 each. In sections that did not include any of the above mentioned States the incidence was either below the 5-year median or was only slightly above it.

Scarlet fever.—This disease continued at a relatively low level. For the 4 weeks ended November 29 the number of cases (5,941) was 84% of the number reported for the corresponding period in 1946 and about 55% of the median for the preceding 5 years. For the country as a whole the current incidence was the lowest reported during these same weeks in the 19 years for which data are available in this form.

Smallpox.—Five cases of small pox were reported during the current 4 weeks period (one each in South Dakota, West Virginia, Kansas, Wyoming, and New Mexico), the number being the lowest on record for this period. The median for the preceding 5 years was 24 cases which represents the 1945 incidence for this period.

Typhoid and paratyphoid fever.—The number of cases (256) of these diseases was slightly higher than in 1946 but it was 84% of the median for the preceding 5 years. The South Atlantic section

reported a few more cases than might be expected, but in all other sections the incidence was about normal or relatively low. These diseases have been on the decline since 1939 and while it may be significant that for the past three 4-week periods the incidence has been higher than in 1946, the incidence was lower for these periods than in any preceding year.

Mortality, All Causes

For the 4 weeks ended November 29 there were 36,144 deaths from all causes reported to the National Office of Vital Statistics by 93 large cities. The median for the preceding 5 years was 35,242 deaths. For the first and last weeks of the current 4-week period the number of deaths was lower than the preceding 3-year median, but during the second week the number was 5.7% higher than the median and in the second week the number was 7.9% higher than the median.

SPECIAL REVIEWS

JOSEPH STOKES, JR., M.D., *Editor*

POLIOMYELITIS: A REVIEW OF ITS NATURAL HISTORY

By ROBERT WARD, M.D.

FRANCIS BACON made the suggestion that in gathering scientific data we ought to be neither like spiders, which spin things out of themselves, nor like ants which merely collect, but like bees which both collect and arrange.

With Bacon's advice in mind, I would like to arrange the facts brought out by certain studies which bear on the following questions: (1) How does poliomyelitis virus enter the human body? (2) How is it eliminated? (3) Where is it found outside of man? (4) What are the modes of spread? (5) Why do we have epidemics?

Until recently, the portal of entry in man was considered by many to be by way of the nose. This concept was based on the following: (1) Virus was reportedly detected in human nasal mucosa in one out of three attempts;[1] (2) Virus had been recovered from human nasopharyngeal washings collected in such fashion that it was impossible to tell which component, nasal or pharyngeal, contributed the virus; (3) the only extra neural site by which rhesus monkeys could be infected had been by nasal instillation. It should be noted that when monkeys are so infected, typical lesions are always found in the olfactory bulbs.[2] Moreover, infection by this route in monkeys can be prevented by spraying the nose with certain chemicals such as zinc sulfate.[3]

What evidence stands against the nose? First, it should be stressed that in the temperate zones most epidemics of poliomyelitis strike during the warm months—not the common season for respiratory diseases; second, painstaking examinations of many human olfactory bulbs revealed as a rule no characteristic lesions;[4,5,6] and last, nasal chemoprophylaxis, which worked in rhesus monkeys, failed to prevent the disease in man.[7,8]

The mouth, or better the alimentary tract, which had always retained a few faithful devotees,[9,10,11] began to receive more attention in this country about 10 years ago when virus was rediscovered in material from the intestinal tract.[12,13] Virus was soon detected rather frequently in the stools not only of paralytic cases, but in those of non-paralytic and abortive cases and in healthy carriers as well.[14,15] Furthermore, certain types of monkeys, namely the cynomolgus from Java and the chimpanzee, were found, unlike the rhesus, to be susceptible to poliomyelitis when virus was given by mouth.[16–21] Howe and Bodian[22] performed crucial tests when they produced the disease by feeding virus to chimpanzees whose olfactory tracts had been cut and whose olfactory bulbs were shown at post mortem to be devoid of lesions. Those who were tempted to transfer these experimental results over to man were confronted by a trap similar to that which had caught interpreters who reasoned that since in the rhesus monkey poliomyelitis virus took by way of the nose, the same must be true of men. It became clear that in order to learn more about the human disease, one would have to study man.

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Presented at the Western Areal Meeting of the American Academy of Pediatrics, Salt Lake City, September 8, 1947.

Accordingly, studies were carried out to determine the pattern of distribution of virus in man in order to learn what system or sytems were attacked.[23,24] Many tissues were removed aseptically from each of several cases post mortem and tested for virus in monkeys. The results indicated that virus was found chiefly in the central nervous system (CNS) and alimentary tract. In the former, virus was not scattered indiscriminately but, in close agreement with the distribution of lesions,[22] it was found in the motor cortex, diencephalon, mesencephalon, pons and medulla, and spinal cord. No virus was isolated from the olfactory bulbs or from other parts of the brain indicating (a) that the olfactory pathway had not served as the portal of entry in these cases and (b) that no general dissemination of virus in the CNS had occurred. The nasal mucosa was also consistently negative. On the other hand, virus was detected from almost all portions of the alimentary tract, i.e. tongue, wall of pharynx with or without tonsils, and washed walls and contents of both small and large intestine. Emphasis should be laid on the fact that no virus was found in other autonomic nervous system cells; namely, those situated in the salivary glands, superior cervical sympathetic ganglia, adrenal glands and urinary bladder wall. It was reasoned that since these negative findings indicated no generalized centrifugal spread of virus from the CNS, its presence, therefore, in the walls of the alimentary tract offered strong evidence for the latter as the site of primary attack and invasion.

The skin, which is another possible way for virus to enter man, deserves consideration because poliomyelitis has actually occurred in man as a result of subcutaneous inoculation. This happened after the injection of vaccines which accidentally contained active virus.[25] Moreover, various kinds of monkeys have been infected by the cutaneous route.[26,27] It has been demonstrated recently that animals thus infected may excrete virus in the stools.[28] This finding suggests that the presence of virus in the stools does not necessarily mean that it entered by mouth. At all events there is no evidence today that the skin serves as the usual portal of entry in man.

How is virus eliminated from the human body? The answer to this question is of paramount importance to the epidemiologist who must determine the pathways of spread. There are four possible portals of exit to be considered: (1) from the bowel, (2) from mouth or nose, (3) from the urinary tract, and (4) from the blood (with the help of a biting insect).

Taking them in reverse order, one can say that virus has been detected but rarely in the blood—one positive of 111 patients tested.[29] Moreover, there is scant evidence to suggest that the mosquito or other biting insect serves as a vector. Since no virus has been found in urine[30] that mode of excretion may also be dismissed. Since early days of investigation many washings of the nose and throat have been tested and a certain percentage found to be positive. Vignec, Paul, and Trask[31] found in their summary of the literature up to 1938 that virus had been detected in material from the nose, throat, tonsils, and trachea in 15% of 105 attempts made during the first 5 days of illness and in 7% of 182 attempts made thereafter. Later Howe and his group, with the technic of testing throat swabs taken during the first three days of illness, found almost half the swabs to contain virus. Results were negative on throat swabs taken later in the disease.[32]

For the last 9 or 10 years the emphasis has been on intestinal excreta as the mode of exit in man. Virus has been detected many times in the stools of paralytic, non-paralytic and abortive cases, and in those of healthy carriers as well. Important as this fact is, one cannot conclude from it that poliomyelitis is spread like an intestinal disease, for, as Paul

has pointed out, other agents such as tubercle bacilli are found in stools, yet tuberculosis is not commonly spread in the same manner as typhoid fever and dysentery.

Now the vital question is: Which is the more important portal of exit from the standpoint of transmission—stools or material from the mouth or nose? In other words is poliomyelitis spread predominantly like intestinal diseases or like respiratory infections such as pneumonia, influenza, and measles? Two methods of approach to the answer will be described. The first involves attempts to compare the relative incidence and persistence of virus in the two locations—stools versus material from the mouth or nose.

In 1941 it was found by Sabin and myself[29] that whereas almost 40% of patients in the first two weeks of paralytic poliomyelitis were excreting virus in the stools, no virus was detected in the nasal secretions or in the oral secretions (saliva). In a later study, using the ultracentrifuge to concentrate virus, Horstman[33] and her co-workers found that the excretion of virus in stools persisted appreciably for 8 weeks. Virus has been found by Lepine[34] and associates as long as 123 days after onset, and by Brown et al[35] 19 days before the onset of paralytic poliomyelitis.

By contrast, virus was detected less frequently in material from the oropharynx and was not found there at all after the first week of illness.[36]

These studies suggest, therefore, that if quantity and persistence of virus were important factors, the stools seemed to have the edge over material from the mouth or throat.

The second approach to the problem was based on the fact that although virus had been detected in the throat, in throat washings, and throat swabs, there was no evidence that virus could actually be expelled from the mouth or nose under natural conditions. The question seemed all the more important in the light of studies by Hamburger[37] and his associates in regard to carriers of hemolytic streptococci. These workers found that the "dangerous" carriers of streptococci, e.g. those expelling organisms into the environment, were individuals who had strongly positive nose cultures, whereas throat carriers whose nose cultures were negative were relatively unimportant in the spread of infection. Accordingly, the following experiment was undertaken to determine whether or not poliomyelitis virus may be expelled from the mouth or nose. Sterile cloth masks were tied over the mouths and noses of 19 patients in the first three days of poliomyelitis. They were then induced to cough, blow, and spit into the masks which became visibly wet. Swabs of the throat and then of the nose were taken. The results of tests in monkeys showed that virus was found in seven patients and that the masks of two of these contained virus, indicating that virus may be so expelled, at least under the conditions of this experiment.[38] However, once more it may be unwise to interpret such experimental results as taking place under natural circumstances since most poliomyelitis patients do not cough, blow or spit. At all events, it seems clear that poliomyelitis virus leaves the body by way of the intestines and, on occasion, by way of the mouth. It seems that the ultimate answer to the question as to which is the more important will come, if it comes at all, from a summation of evidence derived not only from studies on portals of exit but also from studies on portals of entry, of extrahuman sources of virus, and of the various circumstances in which the disease occurs—seasonal and other environmental factors.

Let us turn now to what is known about the extrahuman distribution of virus. The detection of virus in sewage followed soon after its rediscovery in intestinal excretions.[39,40,41] Virus has been detected not only in sewage collected from hospital sewer lines serving paralytic patients but also from that taken from the influent and effluent of municipal disposal plants. One of the most important questions raised was whether

poliomyelitis virus is a normal inhabitant of sewage or whether it is found only in relation to manifest cases on the sewer line. A six year study, begun by Trask and Paul[42] and continued by Melnick,[43] undertook the testing of monthly samples year in year out from a Manhattan plant. Virus was revealed only during the summer or autumn months when paralytic cases were contributing to the sewer line. In the absence of evidence of multiplication of virus in intestinal flora[44] or in sewage,[45] one is left with the probability that the enormous quantities of virus in sewage (virus was isolated from a 200 Ml. sample of sewage flowing at the rate of over 400 million gallons a day) is the result of the excretion of virus by a considerably larger number of individuals than comprise the paralytic cases. It should be stressed that there is no evidence that the presence of virus in sewage plays a role in the spread of poliomyelitis, for it may be there merely as a result of the human disease. Nevertheless one can speculate on the potential dangers involved in the disposal of such large quantities of virus.

The finding of virus in stools and sewage led naturally to investigations of filth flies as possible carriers. Virus was soon detected in flies trapped in different epidemic areas and tested in various laboratories.[46–49] Positive results were obtained not only with flies caught in rural areas near privies where potential sources of virus were obvious, but also from urban epidemics where the source was not obvious. The batches of virus-positive flies contained various species of blow flies (mainly phaenicia sericata and phormia regina) and also the common house fly. It is not known which species are most frequently found associated with virus. Recently light has been shed on the important question as to whether virus is merely carried mechanically on the fly's exterior or whether there is between the two a more intimate biological association. Studies by Melnick and Penner[50] suggest that the latter may be true since human virus was recovered experimentally from the species phormia regina two weeks, and from the fly's excreta, three weeks after ingestion. The important question as to whether virus multiples in the fly is still unanswered.

In an effort to define the possible role played by flies in spreading virus, food was exposed to flies in and about the homes of patients in a poliomyelitis epidenic. This fly-contaminated food was fed to chimpanzees which became carriers of poliomyelitis virus as determined by its recovery from their stools.[51] This finding showed that the fly can deposit an infective quantity of virus on food during an epidemic. No virus, however, has as yet been detected in "natural food" e.g. food not set out for the express purpose of being contaminated by flies.

The presence of virus in flies and fly-contaminated food does not of itself constitute sufficient evidence to incriminate these insects as vectors. It appeared that perhaps the best way to determine the contribution of the fly was by reducing the fly population in certain areas and noting the effect, if any, on the incidence of poliomyelitis in those areas as compared with control districts. Two such attempts have been reported,[52] both of which failed in their purpose in that, although a certain reduction in the number of flies was achieved by spraying D.D.T., in neither epidemic area did sufficient cases occur to make significant the difference between the incidence of poliomyelitis in the sprayed as compared with the control areas. It is hoped that carefully planned, large scale controlled studies eventually will elucidate this problem.

Modes of spread? There appears to be fairly general agreement that poliomyelitis is spread in a number of different ways. One school holds that direct contact with a case or carrier is all important,[53,54] although the nature or degree of contact necessary are

still unknown. Others, admitting that contact infection can occur, believe that it does not explain the whole story. For example, Paul[55] has pointed out the difficulty in trying to reconcile the theory of contact infection with the fact that epidemics almost always start during warm weather. The opening of schools in the fall, moreover, usually coincides with the decline of epidemics.

One sometimes has difficulty in presentations of this sort in separating facts from the interpretation of facts. To lessen the chance of confusion here, I would like to make it plain that we are now about to take off from the solid rock of fact to explore the wide blue yonder of speculation. It is felt that enough evidence has been presented to warrant setting up a working hypothesis as follows: Poliomyelitis is spread in several ways. The evidence in favor of the ailmentary tract as a portal of entry; the presence of abundant quantities of virus in stools, sewage, flies, its persistence in fly excreta for three weeks, and its detection in fly-contaminated food at an epidemic—all are related observations. Although the disease may occur at any season, the tremendous concentration of cases during warm weather is the result of increased dissemination of virus brought about by various factors including insects such as flies. An important test of this hypothesis would be to determine by controlled studies the effect of reducing the fly population on the incidence of poliomyelitis.

Why have epidemics of poliomyelitis arisen within the past 50 to 60 years in certain countries? It is hard to think of a more important unanswered question concerning this disease. Although the disease is apparently world-wide in distribution, it is clear that large epidemics began about 1870 in Scandinavia, 1880 in Europe, and 1890 in the United States, Canada, Australia and New Zealand.

There is some evidence to suggest that in certain other parts of the world the incidence of poliomyelitis may be as large but that sizeable outbreaks seldom occur so that the disease attracts little notice. Our attention has been drawn to this by Paul, Havens, and Van Rooyen[56] in regard to North Africa, while Levy[57] has decribed a similar situation in Palestine. In both areas the majority of cases occurred in children under the age of 5 years, the importance of which will be stressed later. Sabin[58] has recently described the presence of poliomyelitis in the Philippine Islands and North China as revealed by an apparently high incidence in our armed forces stationed there, although very few cases were recognized in the native populations. It seems possible that Japan presents the interesting picture of the transition from the endemic stage to periodic epidemics of poliomyelitis. Paul[59] states that large epidemics were apparently not recorded in Japan until the summers of 1938 and 1940. As in the Middle East, those attacked were predominantly young children, 70% being under 3 years and 90% under 5 years. This is in contrast to northern United States, Scandinavia and Australia where today older children and adolescents make up a large percentage of those attacked. Wenner[60] has shown a similar difference in age distribution between Alabama and Connecticut. In Alabama the attacks rates were 3.0 per thousand for children under 5 years and 1.0 for children 5 to 10 years of age; in Connecticut the older children (5 to 10 years) were attacked at least as frequently as those under 5 years (5.5 per thousand).

It can be postulated that, in regions where poliomyelitis is endemic and where epidemics do not exist or have but lately made their appearance (Japan), the native populations are immune as a result of early exposure to poliomyelitis virus. This is also reflected in the young age distribution of cases. As a possible mechanism for the production of this immunity, it has been observed that sanitary conditions are more primitive

in endemic areas than in countries afflicted by epidemics; primitive sanitation would tend to promote constant general dissemination of virus leading to exposure at an early age and the development of active immunity. In countries where sanitation is good or improving, dissemination of virus is generally less, opportunities for immunization are proportionately decreased, and consequently there develops periodically a population ripe for epidemics.

This hypothesis seems not unreasonable and deserves to be tested by investigations carried out in endemic regions with primitive sanitation for the purpose of determining: (1) the detectability of virus in the population and environment, (2) the development of antibody in relation to age, and, (3) the number of different immunological types of virus and their relationship to strains isolated in countries where epidemics prevail.

These investigations should be integrated with further careful studies of the geographical, seasonal, and age distribution of manifest cases.

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BOOK REVIEWS

Child Health and Development: A Symposium by Special Contributors; Edited by R. W. B. Ellis, O.B.E., M.D., F.R.C.P. Price $4.00, 372 pages, 49 illustrations. J. & A. Churchill Ltd. London, American Publisher Grune & Stratton, New York 16, 1947.

Dr. Ellis is Professor of Child Life and Health at the University of Edinburgh. His book reflects this point of view and not that of our ordinary professor of pediatrics. It deals specifically with the development of the normal child and the services existing in Great Britain for his welfare. It emphasizes the importance of the study of child life and health as opposed to disease. As preventive pediatrics becomes more effective and as we become more aware of the social advantages of improving child life, more such books will be written.

The book is divided into two parts. The first deals with the physical, emotional and intellectual development of the normal child. Listing the contributors to this section is perhaps the best way to outline its content: F. J. Browne, Consulting Obstetrical Surgeon, University College Hospital, London; Sir Joseph Barcroft, Director of the Unit of Animal Physiology, Cambridge; Anna Freud, formerly Director of the Institute of Psycho-analysis, Vienna, and now organizer of the Hampstead Nurseries, London; R. E. Rix, Surgeon in Charge of Dental Department for Children, Guys Hospital, London; H. A. Harris, Professor of Anatomy, Cambridge; L. S. Penrose, Professor of Eugenics, University College, London; G. Pauling Wright, Professor of Pathology, Guys Hospital and University of London; and R. W. B. Ellis. To this reviewer the chapters on the functional development of the fetus by Barcroft and on the establishment of feeding habits and on emotional and instructive development by Freud are the high spots.

The second part of the book reviews various social services and conditions directly related to child health. The contributors are P. A. Gorer, lecturer in pathology, Guys Hospital and the University of London; Sir Fred Clarke, formerly professor of education and director of the University of London Institute of Education; L. M. Rendel, honorary director of the Caldecott Community; E. Younghusband, Chairman, West London Juvenile Court; E. Capstick, formerly professor of dairying, University of Reading. Worthy of note is the statement that the consumption of milk by children "as a result of government sponsored schemes, has increased by over 90% during the war years" in spite of the difficult supply position.

Allan M. Butler

Developmental Diagnosis, Normal and Abnormal Child Development, Clinical Methods and Pediatric Applications, Arnold Gesell, M.D. and Catherine S. Amatruda, M.D., Second Edition. Price $7.50, 496 pages, 22 illustrations. Paul B. Hoeber, Inc. Medical Book Department of Harper & Brothers, New York 16 and London, 1947.

A new edition of this important book is most welcome. Considerable change has been achieved in format by using different paper and reducing the page size, making the book lighter and more convenient.

It is almost a new book because of the many changes and much new material in keeping with rapid developments in this field. There seem to be two new noticeable trends: (1) a little more toward the organic and physical sides of the child as well as the diseases and disorders under consideration, particularly as the process of physical growth may be involved in these changes; (2) the trend toward consideration of growth and development from the standpoint of education and training of pediatricians. The authors are correct in emphasizing the necessity of proper understanding of these principles for a well trained and equipped pediatrician.

Chemical Anatomy, Physiology and Pathology of Extracellular Fluid, A Lecture Syllabus, James L. Gamble, M.D., Fifth Edition. No pagination, 52 Charts. Harvard University Press, Cambridge, 1947.

A new edition of this important laboratory syllabus brings the text up to date. Changes have been

made in keeping with recent developments in this field. This syllabus is invaluable to both workers in physiology of body fluids as well as to practitioners who wish to understand these principles.

THE AMERICAN ILLUSTRATED MEDICAL DICTIONARY, W. A. Newman Dorland, A.M., M.D., 21st Edition. Price $8.00, 1600 pages, 880 illustrations including 233 portraits. W. B. Saunders Co., Philadelphia 5, and London, 1947.

A new edition appears after four years. There is no change in format and the pages are numbered about the same. Extensive changes have been made in the text by additions resulting from new research and discoveries. The entire volume has been reexamined by the editor and by a staff of experts selected from special fields.

The principal changes have been in the use of names of proprietary products and in biochemistry and pharmacology caused by developments in antibiotics, enzymes, vitamins, and endocrines. Entirely new are terms in nucleonics, including radioactive isotopes of chemical elements.

THE FOOT AND ANKLE, Philip Lewin, M.D., Third Edition. Price $11.00, 847 pages, 389 illustrations. Lea & Febiger, Philadelphia 6, 1947.

There is considerable new material related chiefly to developments in orthopedic surgery during the war and to chemotherapy. There are 182 more pages than in the previous edition. It is a very important reference book for the pediatrician, both for information about development and training of good foot posture, the recognition of disturbances of that posture, and of diseases of the feet. A considerably sized space is devoted to poliomyelitis. The author is a member of the Medical Advisory Committee of the National Foundation for Infantile Paralysis.

NEWS AND ANNOUNCEMENTS

On October 18, 1947, a dinner was given in honor of Dr. Franklin P. Gengenbach by the Rocky Mountain Pediatric Society at the University of Colorado Medical Center. Dr. Gengenbach, the first professor of Pediatrics at the University and one of the founders of the Rocky Mountain Pediatric Society in 1920, was president of the American Academy of Pediatrics in 1943-44 and vice-president of the American Pediatric Society in 1932 and 1936.

At the dinner a library, to be called the Gengenbach Pediatric Library, was presented to the medical school by Dr. Wiley Jones. The new library will be housed adjacent to the pediatric ward. A special book plate (shown here) has been designed to identify the library's collection of books and bound periodicals.

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In recognition of his outstanding contribution to pediatrics, Dr. Isaac A. Abt was honored by members of the Chicago Pediatric Society December 18 on his 80th birthday. A scroll from the Society was presented to Dr. Abt by the president, Dr. H. William Elghammer.

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Announcements: The New Jersey Medical Society with the State Health Department is developing a school health program with the following goals to be attained:

(1) When possible, assembly-line physical examinations of school children should be abandoned in favor of individualized studies in the presence of the parents by qualified physicians, properly remunerated.

(2) As a minimum, the examination should be held on admission to school, to the fourth grade, to the eighth grade and to the twelfth grade.

(3) Each county superintendent should be required to add a psychiatrist to the county school system, possibly as a consultant rather than on a full-time basis.

(4) All school teachers and adult school personnel should be given roentgen examinations for tuberculosis every year rather than every third year, as at present.

Dr. Samuel Blaugrund, Trenton, a fellow of the Academy and a member of the Public Health Committee of the State Medical Society, with Dr. Wilson G. Guthrie, Trenton, of the State Department of Education, are responsible for the program.

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The annual meeting in 1948 of the American Pediatric Society will be held jointly with the Canadian Society for the Study of Diseases of Children at the Hotel Chateau Frontenac in Quebec, on May 24 to 26, inclusive.

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Appointments: Dr. Joseph Garland, Boston, has been named to succeed the late Dr. Robert N. Nye as editor of the *New England Journal of Medicine*. Dr. Garland, a fellow of the Academy, is a graduate of Harvard Medical School, Boston, 1919, has served on the editorial board of the journal for 25 years and has practiced pediatrics in Boston for 26 years. The *New England Medical Journal* is the official organ of the Massachusetts and the New Hampshire Medical Societies.

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Dr. Tryee C. Wyatt has been appointed professor of pediatrics and chairman of the pediatric department of Syracuse University College of Medicine. Dr. Wyatt, who is a fellow of the Academy, received his M.D. degree from Syracuse University College of Medicine in 1922. From 1922 to 1927 he was connected with the department of pathology at Syracuse University. This was followed by appointments at Peter Bent Brigham Hospital, Boston, and New York Nursery and Child's Hospital and Cornell University Pediatric Department, New York. In addition to his new duties, Dr. Wyatt will continue to direct the pediatric pathology division at Syracuse Memorial Hospital.

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Dr. Paul V. Wooley, Jr., Harvard 1935, this fall became head of the department of pediatrics at

Wayne University College of Medicine, Detroit. Formerly Dr. Wooley served as associate professor of pediatrics at the University of Oregon Medical School, Portland.

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Dr. A. L. VanHorn, Washington, has recently resigned from the staff of the Children's Bureau to accept a position as Medical Director of the Kate Macy Ladd Fund of Newark, N.J. This is a new, private foundation established under the provisions of the will of the late William G. Ladd in honor of his late wife Kate Macy Ladd, and it will devote its interests and activities to the field of convalescent care for all age groups. Under provisions of the will, approximately an eleven million dollar trust fund has been reserved to carry on the activities of the foundation. The Ladd mansion and estate at Far Hills, N.J., are to be used as convalescent headquarters for women in accordance with the provisions of the will. It is anticipated that services for others will be developed in the future. The foundation will be operated from 744 Broad Street, Newark, N.J.

Previous to his new appointment, Dr. VanHorn was on the staff of the Children's Bureau for eleven years, during which time he served as regional medical consultant, assistant director of the Crippled Children's Service, assistant director of the Division of Health Services in charge of Crippled Children's Services, director of the Division of Health Services, and as chief of the Program Planning Section Division of Health Services. Convalescent care has been of paramount interest to Dr. VanHorn for some time, and just recently he served as chairman of a study committee on convalescent care for children for the National Society for Crippled Children and Adults, Inc.

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Service News: Dr. Bengt L. K. Hamilton, Medical Director, U. S. Marine Hospital, Staten Island 4, N.Y., has been transferred to the Regular Corps of the U. S. Public Health Service.

Dr. Milton Kurzrok, Comdr. (MC) USN, U. S. N. Hospital, Oakland 14, Calif., has been transferred to the Regular Navy.

The following Academy fellows have been released from military service recently: Dr. Robert A. Bier, Washington, D.C., and Silver Spring, Md.—Army; Dr. G. D. Carlyle Thompson, Portland, Ore.—Army; Dr. A. Max Kohn, Beverly Hills, Calif.—Army; Dr. Ralph H. Kunstadter, Chicago, Ill.—Army; Dr. George Renner, Jr., Cincinnati, Ohio—Army; Dr. C. Walter Rumpf, Faribault, Minn.—Army; and Dr. Mendel Zeligs, Cincinnati, Ohio—Navy.

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Deaths: Dr. Charles James Bloom, 60, New Orleans, died August 29, of coronary thrombosis. He was a graduate of the Medical Department of Tulane University of Louisiana, New Orleans, 1912; formerly professor of pediatrics at the Tulane University of Louisiana Graduate School of Medicine; served during World War I; was a fellow of the Academy; a fellow of the American College of Physicians; past president of the Louisiana Pediatric Society; and author of "Care and Feeding of Babies in Warm Climates."

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Dr. George Becker Cornick, 52, San Angelo, Tex., University of Texas School of Medicine, Galveston, 1919, died August 28 of tuberculosis. Dr. Cornick was a member and a past president of the Texas Pediatric Society, a fellow of the Academy, and in 1921 he served as a member of the American Relief Administration in Russia.

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Dr. Martin D. Ott, Davenport, Iowa, died August 19, 1947. Dr. Ott was an Emeritus member of the Academy.

EDITORIAL

THE appearance of PEDIATRICS in the field of medical literature represents the growth of pediatrics as a specialty and of the American Academy of Pediatrics. The decision of the Executive Board, of the Special Committee appointed to study the situation and of the Executive Board of the Academy to establish a new journal has been reached after careful consideration.

The Executive Board is a semi-autonomous group appointed by and representing the Academy. The Board recognizes its responsibility in guiding PEDIATRICS to meet this opportunity successfully. It also knows that the success of this undertaking will depend in part on future developments by the pediatricians of this country and by the Academy. Neither PEDIATRICS nor the Editorial Board can create material for publication. The Board can, however, find material which is available and it can determine the quality of that material. This it will do faithfully and honestly. The Board recognizes fully two responsibilities: first, that due to two closely related groups—the readers and the authors; and, second, that due to the Academy and directed toward making known the activities of the Academy. The first responsibility involves the Academy and its members also, but over and above that it involves everyone interested in pediatrics, whoever they may be. PEDIATRICS serves all these.

By arrangement with the Publication Committee of the Academy and with the Publisher of PEDIATRICS, the Editorial Board has been relieved of all responsibility for business matters connected with the journal, a device which permits the editors to confine their attention to the impartial selection of material.

The scope of PEDIATRICS is as broad as the specialty itself. Reports of scientific and clinical investigation will be published, as will papers on subjects which are related to pediatrics. The content of the journal is thus intended to encompass the needs of the whole child in his physiologic, mental, emotional and social structure. The single word, PEDIATRICS, has been chosen to indicate this catholic interest.

Careful consideration and planning have been given to the form of PEDIATRICS. Medical publications follow an almost stereotyped standard from which there is little chance to vary; but every effort has been made to present PEDIATRICS in an attractive, interesting and useful way without altering accepted standards. The style of the title word, PEDIATRICS, has been chosen to indicate its distinctive individuality.

There are four main divisions of the text material. The Division of Original Articles speaks for itself. Every article has been approved by members of the Board and meets the three criteria: presentation of new or newly evaluated thought, high quality of preparation and accuracy of information. The Division for Academy Proceedings and Reports includes whatever is of interest and worth recording permanently for the general reader as well as for the Academy member. The Feature Sections Division includes The Pediatrician and the Public, Trends in Health Legislation and Administration, Public Health, Nursing and Medical Social Work, and Education. In addition there will be editorials, special reviews, book reviews, international news and reports, and news and announcements. The fourth division of PEDIATRICS, devoted to advertising, is also under complete editorial control, and the Board selects its content on the basis of carefully defined criteria of acceptability.

Special effort has been made to assist in the further development of District IX of the Academy in Latin American countries. Abstracts of all original articles are published in

Spanish with this object in view. The Canadian provinces are already adjoining districts of the Academy. Every possible effort will be made also to encourage relations with pediatricians in other countries by making the journal of great value to them primarily by virtue of its inherent worth, but also as a channel of information concerning developments in pediatrics in this country. The sustained success of the several international pediatric congresses indicates there is a need for a medium of expression of those relationships.

Every fellow of the Academy should realize he has a share—no matter how large or how small—in PEDIATRICS. Constructive criticism and suggestions are welcome at all times. Healthy discussions of honest differences of opinion are always enlightening and thought provoking. Comments, editorials and more lengthy discussions of these opinions will be printed provided they are impersonal, pertinent and objective.

PEDIATRICS is the printed record of the Academy and of progress made for the welfare of children. The Editorial Board recognizes its opportunity to guide PEDIATRICS toward a position of leadership in the pediatric literature of today and of the future. It will be the Board's constant aim to give accurate and just expression in these columns to the achievements and the ideals of pediatricians everywhere.

INTERNATIONAL NEWS AND REPORTS

Dr. Yousef N. Azzouni, of Alexandria, Egypt, has been awarded the first Mead Johnson Fellowship of the Society for Pediatric Research. A visiting fellow in this country, Dr. Azzouni is now studying in the pediatric department of St. Louis University School of Medicine. He has spent four years as resident medical officer in the Queen Nazhi Children's Hospital of Alexandria and will return to join the faculty of the School of Medicine of the Fuad I University at Cairo.

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Dr. Irvine McQuarrie, head of the pediatric department, University of Minnesota Medical School, Minneapolis, returned from Japan in December after conducting a three months' survey of medical education and practice for the Rockefeller Foundation. While in Japan Dr. McQuarrie visited medical schools and served as a special consultant to General MacArthur on medical education. His report will aid the Rockefeller Foundation in determining its future support of Japanese medical training.

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Dr. Henry F. Helmholz, Mayo Clinic, Rochester, Minn., has been appointed chief medical consultant, in Europe, of the International Children's Emergency Fund of the United Nations, with headquarters in Paris since early November. He will be responsible, in cooperation with the chief technical consultant of the fund, for the organization and direction of the European staff of pediatricians, nutritionists, nurses and child welfare consultants. He will assist the various governments, and will collaborate with the technical staff of the World Health Organization and other units of the United Nations concerned with the health and welfare of European children.

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Dr. Rudolf Neurath, 78, professor of pediatrics, University of Vienna, 1913-1938, died in New York, October 14, of heart disease.